IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

TO OPEN ***JUST DO THIS:***

1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.

2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.

3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.

4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT® Servicer

SET 501 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ OCT. 1960

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C-1010G, C-1010T	501-4
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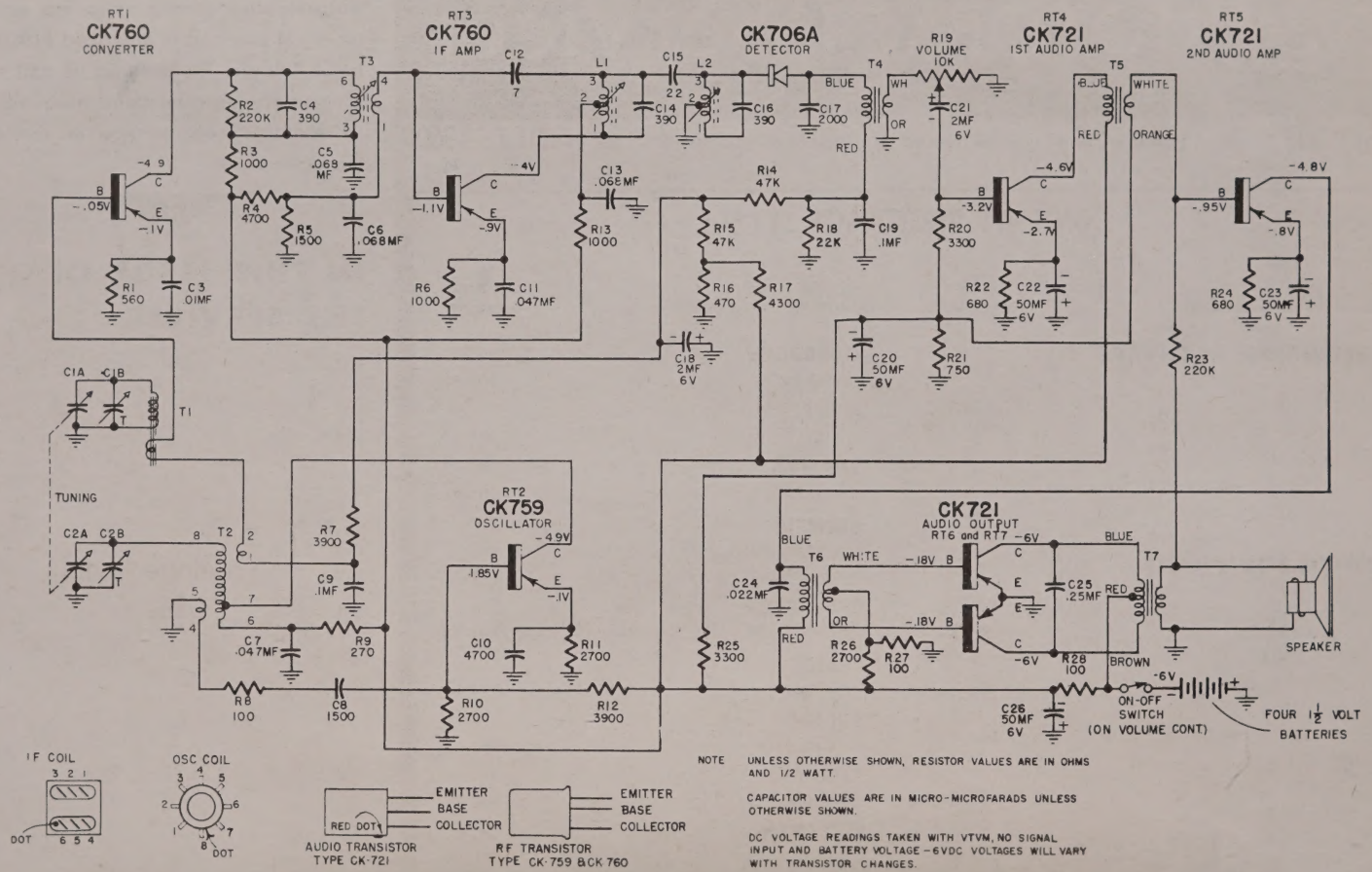
This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

IN THIS ISSUE OF THE SERVICER:

Truetone Model D3615A



NOTE UNLESS OTHERWISE SHOWN, RESISTOR VALUES ARE IN OHMS AND 1/2 WATT.

CAPACITOR VALUES ARE IN MICRO-MICROFARADS UNLESS OTHERWISE SHOWN.

DC VOLTAGE READINGS TAKEN WITH VTVM, NO SIGNAL INPUT AND BATTERY VOLTAGE -6VDC VOLTAGES WILL VARY WITH TRANSISTOR CHANGES.

TRUETONE MODEL D3615A

Schematic Diagram Courtesy of Western Auto Supply Company

PHOTOFACT® Folder with CIRCUITRACE®

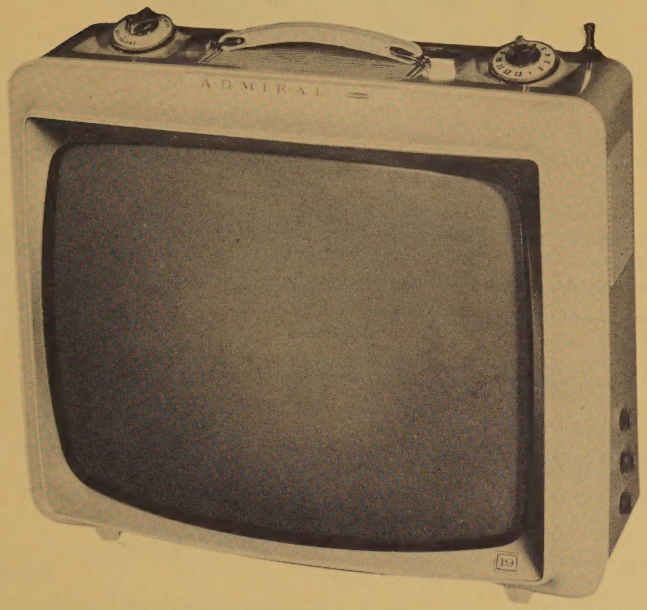
**ADMIRAL CHASSIS
15G1B, 15UG1B**

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

ADMIRAL CHASSIS
15G1B, 15UG1B



ADMIRAL CHASSIS
15G1B, 15UG1B

MODEL PL19J133 (CH. 15G1B)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

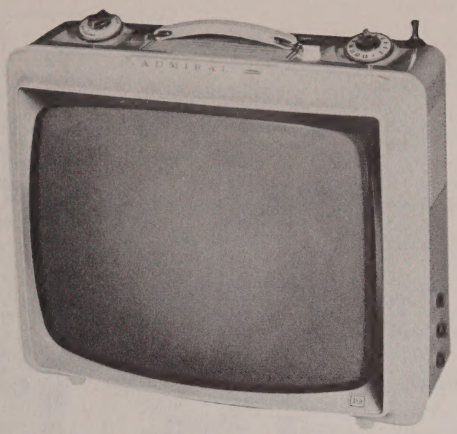
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

DATE 10 – 60 SET 501 FOLDER 1

SET 501 FOLDER 1

PHOTOFACT® Folder with CIRCUITRACE®

ADMIRAL CHASSIS 15G1B, 15UG1B



MODEL PL19J133 (CH. 15G1B)

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

Care should be exercised when connecting test equipment or physically contacting chassis. Isolation devices employed by manufacturer should be checked and properly connected before returning receiver to owner.

TRADE NAME	ADMIRAL	MODELS	CHASSIS
		PL19J131, PL19J133, PL19J135, PL19J140, PL19J141, PL19J149	15G1B
		PL19UJ131, PL19UJ133, PL19UJ135, PL19UJ140, PL19UJ141, PL19UJ149	15UG1B
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois		
TYPE SET	Portable Television Receiver		
TUBES	VHF - Fourteen, UHF - Fifteen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING VHF: 145 Watts, 1.35 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

It is necessary to remove cabinet front with picture tube mounting (and picture tube) for safety glass cleaning. Remove rear cover, hi voltage lead, picture tube socket, and yoke plug. Remove 3 screws at bottom front of cabinet and 2 screws inside of cabinet (one on each side) holding cabinet front. Pull assembly out front.

FUSE DEVICE

A Circuit Breaker is used for low voltage power supply protection, and may be reset by depressing the reset button. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up VHF Oscillator, remove Channel Selector knob, Fine Tuning knob and gray vinyl insert.

AGC

The AGC may be varied by means of an AGC Control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by connecting the lead from pin 4 of the picture tube (thru a 270K resistor) to various voltage points. (For location, see photo "Cabinet-Rear View").

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Lock Coil Slug. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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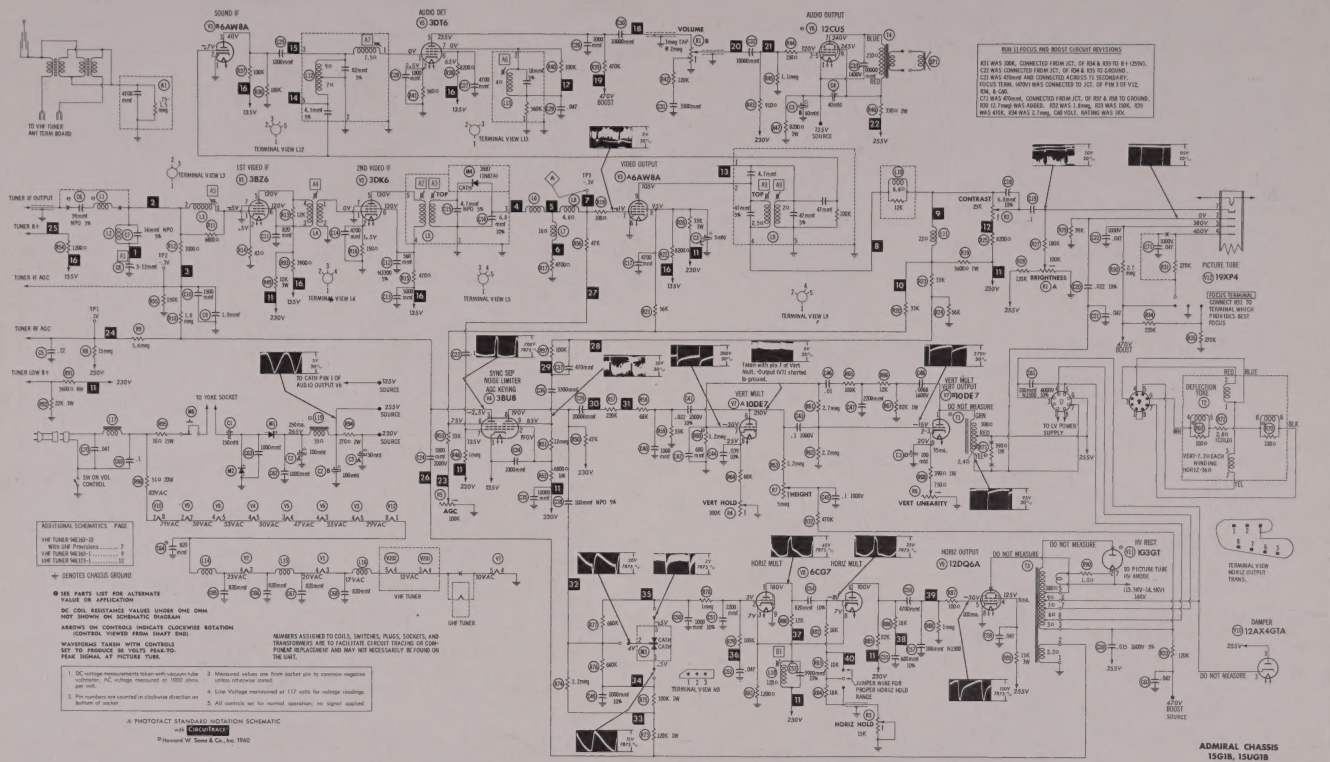
the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

ADMIRAL CHASSIS 15G1B, 15UG1B

ADMIRAL CHASSIS 15G1B, 15UG1B

SET 501 FOLDER 1


SOUND IF
6AW8A
AUDIO DET
3DT6
VOLUME
AUDIO OUTPUT
12CU5
1ST VIDEO IF
3BZ6
2ND VIDEO IF
3DK6
VIDEO OUTPUT
6AW8A
TUNER IF OUTPUT
TUNER RF AGC
TUNER LOW B+
TUNER HIGH B+
TUNER IF AGC
TO VHF TUNER ANT TERM BOARD
TERMINAL VIEW L12
TERMINAL VIEW L13
TERMINAL VIEW L3
TERMINAL VIEW L4
TERMINAL VIEW L5
TERMINAL VIEW L9
TERMINAL VIEW L10
TERMINAL VIEW L11
TERMINAL VIEW M3
TERMINAL VIEW M9
TERMINAL VIEW M10
TO CATH PIN 1 OF AUDIO OUTPUT V6
TO YOKE SOCKET
50K ON VOL CONTROL
SYNC SEP NOISE LIMITER AGC KEYING
3BU8
AGC
VERT MULT
1QDE7
VERT OUTPUT
1QDE7
VERT HOLD
VERT LINEARITY
HEIGHT
CONTRAST
BRIGHTNESS
PICTURE TUBE
19XP4
DEFLECTION YOKE
TO LV POWER SUPPLY
HORIZ MULT
6CG7
HORIZ OUTPUT
12DQ6A
HORIZ HOLD
HV RECT
1X3GT
TO PICTURE TUBE HV ANODE
DAMPER
12AX4GTA
TERMINAL VIEW HORIZ OUTPUT TRANS.
VHF TUNER
UHF TUNER
DO NOT MEASURE
FOCUS TERMINAL
RUN 11 FOCUS AND BOOST CIRCUIT REVISIONS
ADDITIONAL SCHEMATICS PAGE
VHF TUNER 94E363-10 With UHF Provisions..... 7
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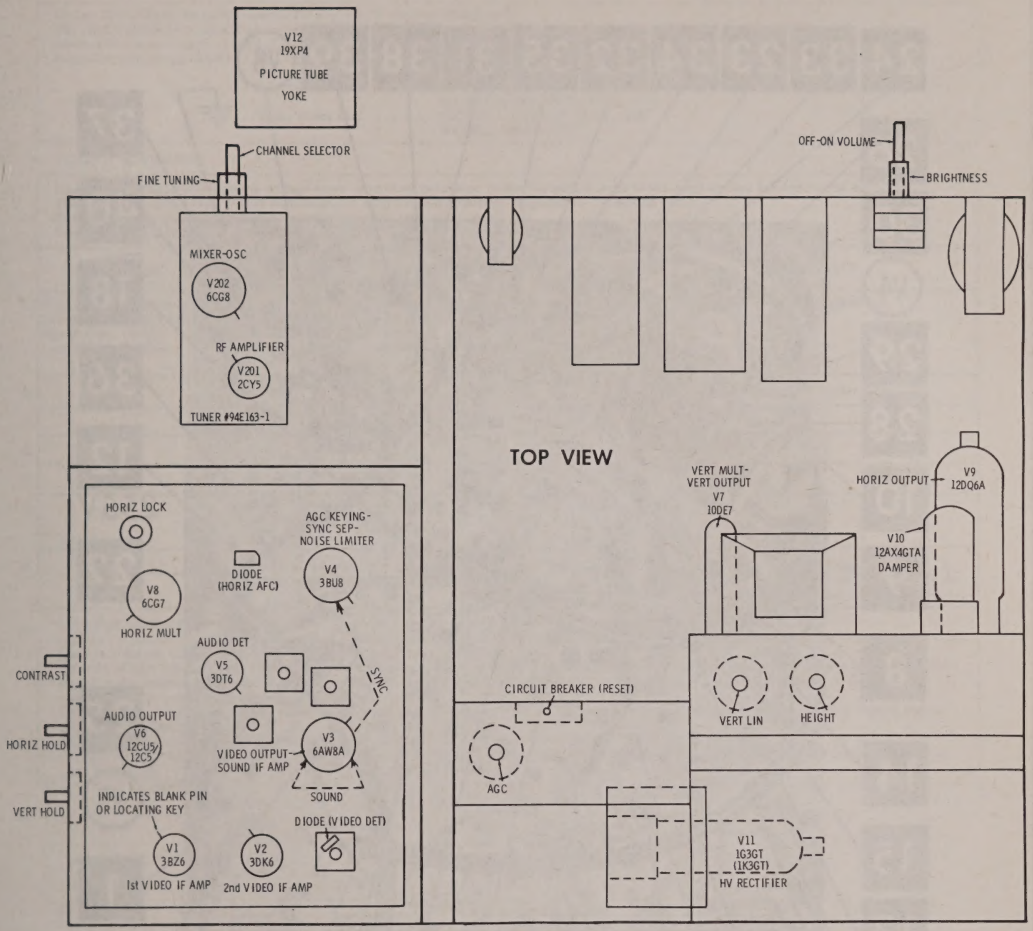
DENOTES CHASSIS GROUND
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
1. DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured on 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUIT-FACT
© Howard W. Sams & Co., Inc. 1960
ADMIRAL CHASSIS 15G1B, 15UG1B

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

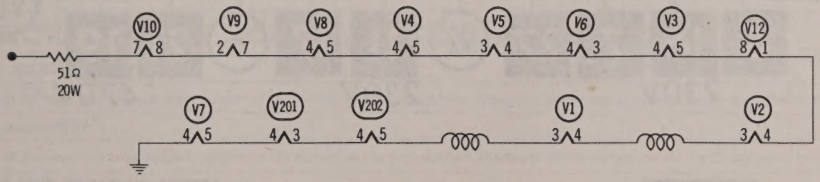
POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker, Rectifiers (B+)

SWEEP FAILURE
No raster, has sound V8, V9, V10, V11, V12
No vertical deflection V7
Poor vert. linearity or foldover V7
Poor horiz. linearity or foldover V8, V9, V10
Narrow picture Rectifier (B+), V8, V9, V10
Vert. off freq. V7
Horiz. off freq. Diode (Horiz. AFC), V8

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, Diode (Video Det.), V3
No pic, no sound, has snow V201, V202
No pic, has sound, has raster V3
Has pic, no sound V3, V5, V6
Overloaded picture V4

SYNC FAILURE
No vert. sync V4
No horiz. sync V4
No vert. or horiz. sync Diode (Horiz. AFC), V4

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



SET 501 FOLDER 1

A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A1 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A2 thru A9 ..... GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545
Mixer Plate Coil ..... GENERAL CEMENT #9296, 9297
WALSCO #2546, 2547

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side to ungrounded tube shield floating over Mixer-Osc. (V202). Low side to chassis.	Not used	47.25MC (Unmod.)	Any non-interfering channel	USE VTVM DC probe thru 47K to point (A). Common to chassis. (Across Video Det. load)	A1	Adjust for MINIMUM deflection.
2.	"	"	44.2MC	"	"	A2	Adjust for maximum deflection.
3.	"	"	42.7MC	"	"	A3	"
4.	"	"	44.3MC	"	"	A4	"
5.	"	"	42.7MC	"	"	A5	"
6.	"	"	44.8MC	"	"	Mixer Plate Coil	"
7.	"	44.0MC (10MC Swp.)	42.25MC 45.75MC	"	Vert. Amp. thru 47K to point (A). Low side to chassis.		Check for response similar to Fig. 1. If necessary, retouch SLIGHTLY A2 thru A5 and Mixer Plate Coil for desired response.

SOUND IF ALIGNMENT

Tune in a strong TV signal and adjust controls for normal operation.
Turn A6 slowly counterclockwise until a buzz is heard in the sound. Turn counterclockwise for maximum undistorted sound. Reduce the signal at the antenna terminals (by use of an adjustable attenuator or disconnecting antenna) until a strong hiss similar to super-regeneration is heard in the sound.
Carefully adjust A7 for maximum undistorted sound with MINIMUM hiss. If the hiss disappears during alignment, further reduce signal until hiss returns and retouch A7.
Carefully adjust A8 for MINIMUM 4.5MC beat interference in picture.
Carefully adjust A9 for maximum undistorted sound with MINIMUM hiss. If the hiss disappears, further reduce signal until hiss returns and retouch A9.

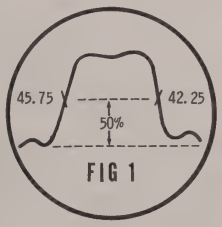


FIG 1

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools: GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

VHF OSCILLATOR ALIGNMENT

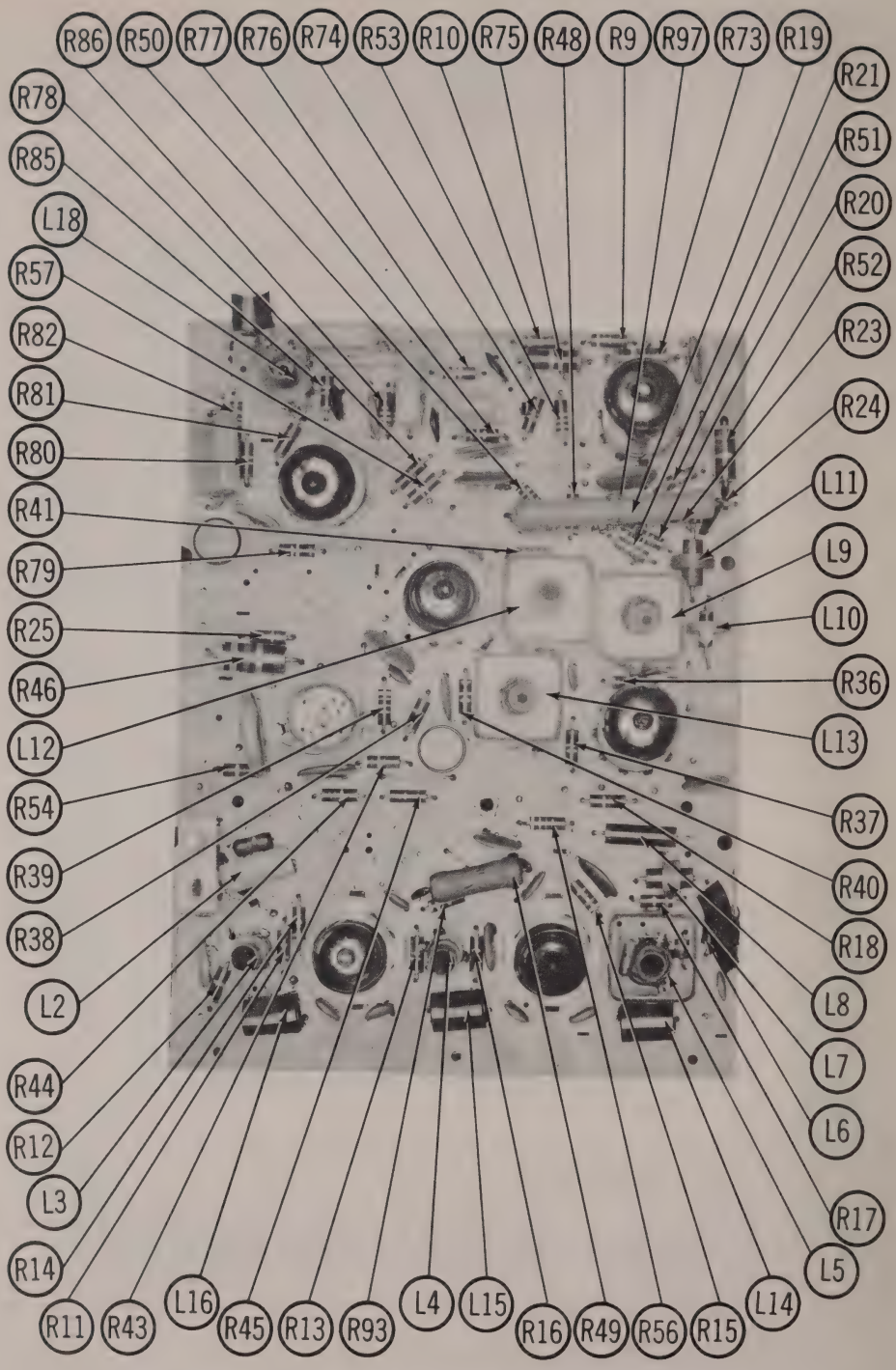
The individual channel adjustment screws are accessible one at a time, thru a hole in the front of the tuner, as the Channel Selector is rotated. Set the Fine Tuning to the center of its range and switch to channel to be adjusted and adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

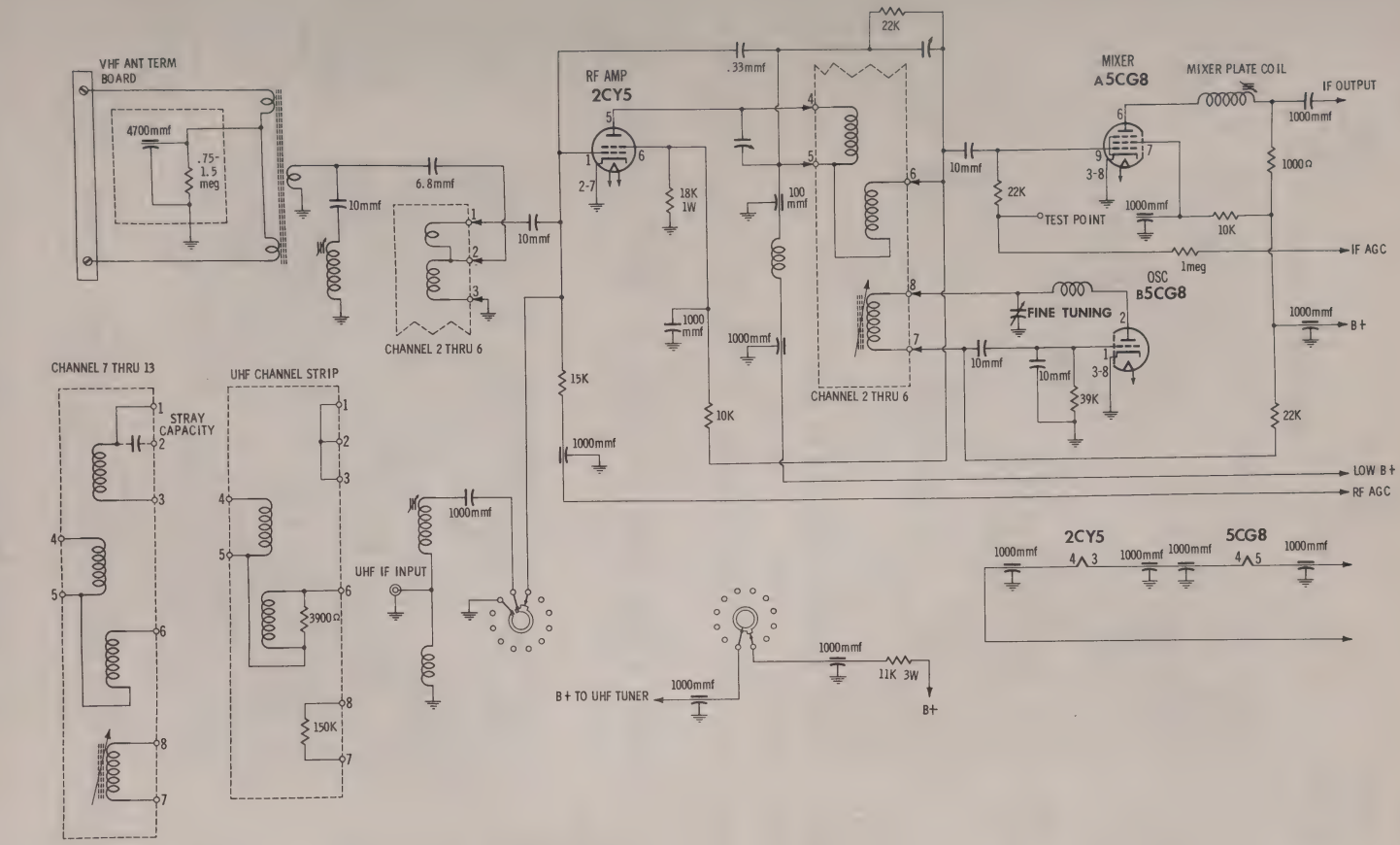
This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

UHF TUNER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.



PRINTED BOARD - RESISTOR & INDUCTOR IDENT.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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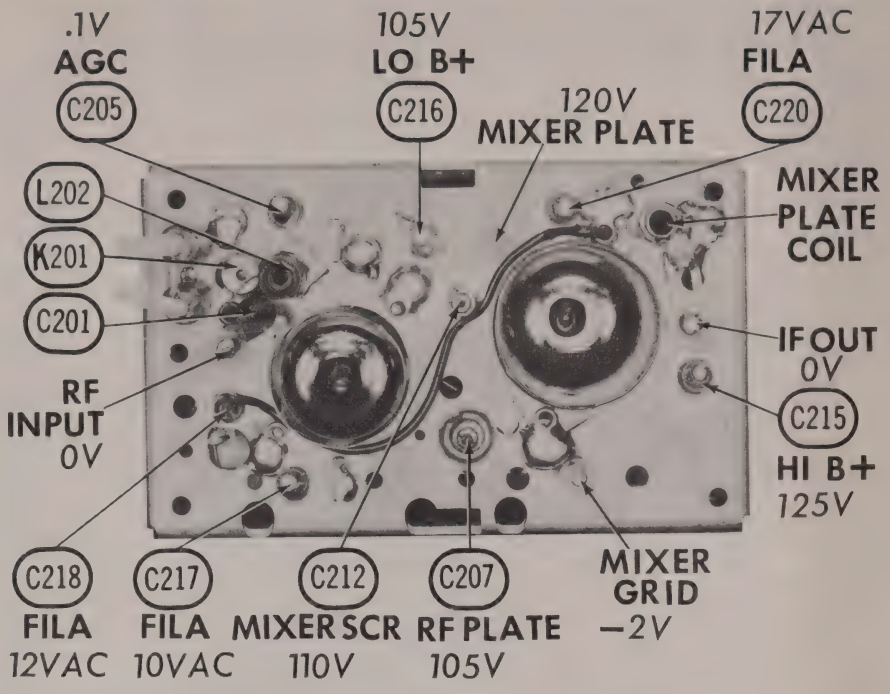
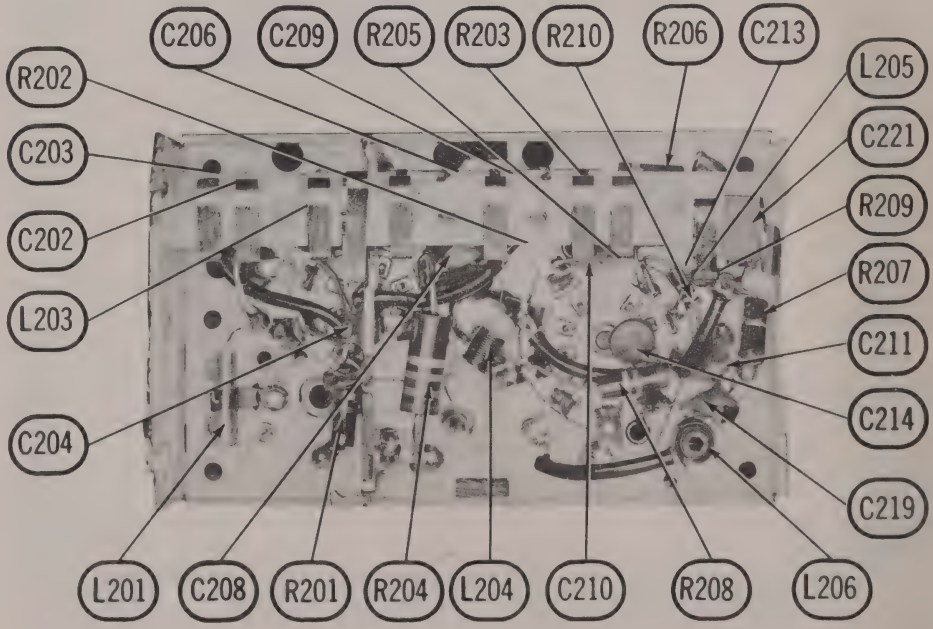
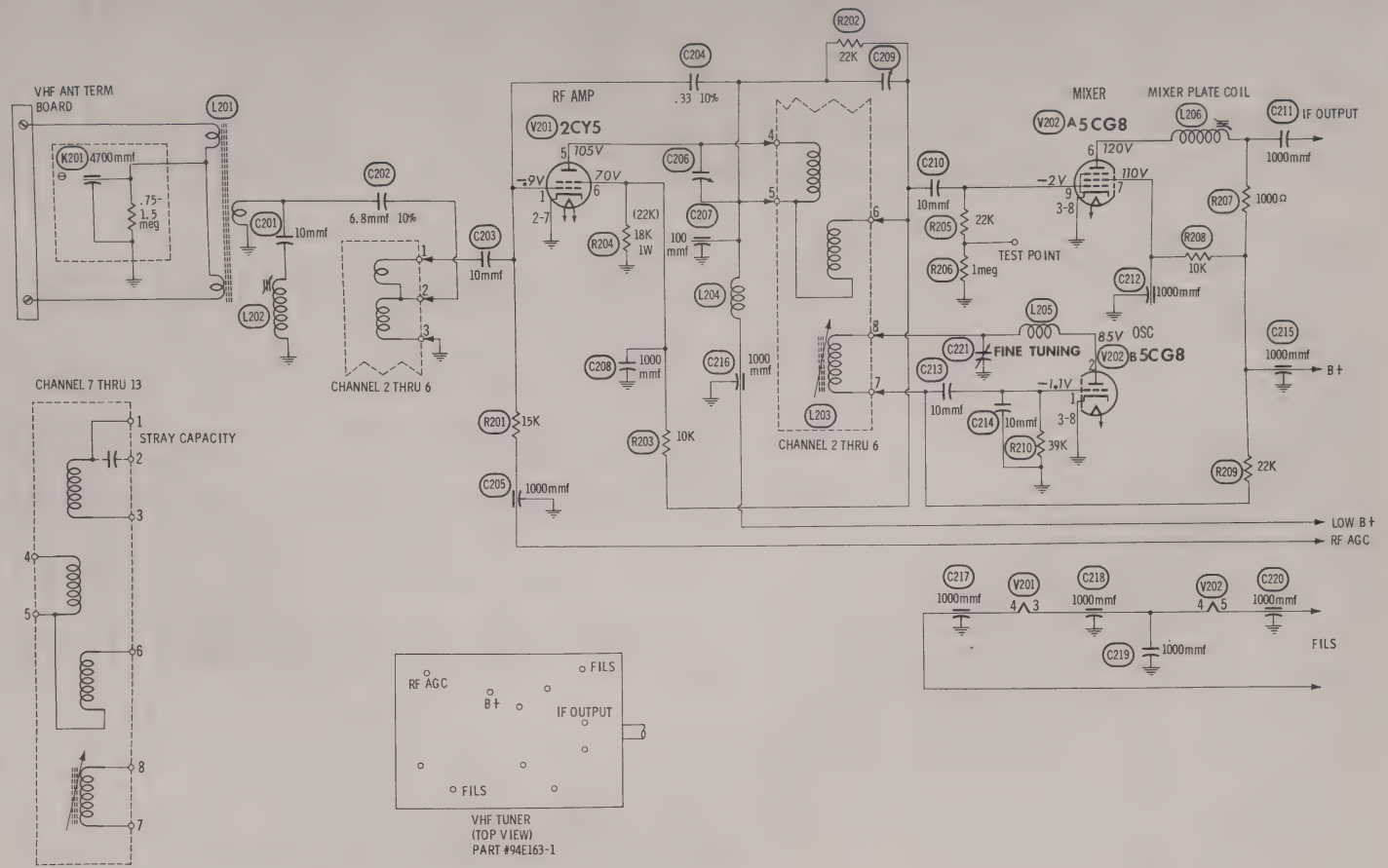
VHF TUNER with UHF Provisions - 94E163-10



VHF TUNER 94E163-1 - TOP VIEW



VHF TUNER 94E163-1 - BOTTOM VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER 94E163-1

ADMIRAL CHASSIS
15G1B, 15UG1B

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC * USE	TYPE	ITEM No.	RAYTHEON * USE	TYPE	ITEM No.	SYLVANIA * USE	TYPE
V1	1st Video IF Amp.	2BZ6	V8	Audio Output				12CU5/13C5 (12CU5) *
V2	2nd Video IF Amp.	3DK8	V7	Vert Multi - Vert Output				
V3	Video Output - Sound IF Amp	6AW8A	V8	Horiz. Mult.				10DET
V4	AGC Keying - Sync Sep. - Noise Limiter	3BU8	V9	Horiz. Output				6CQ7
V5	Audio Det	3DT6	V10	Damper				12DQ6A
			V11	HV Rectifier				12AX4GTA
								1G3GT (1K3GT) *

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA ADMIRAL PART No.	GENERAL ELECTRIC No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V12	19KP4		19KP4			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	VOLT.	REPLACEMENT DATA ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C3	150	200	67DE8-324	AFHR-17-3S	XAG8S	FPH3	TMH-1400	TVL-1540	
C3A	100	350	67DE8-33L	AFE2-45-0-30	BG33J	FP337.7	TMD-3458	TVL-3454	
C3A	50	350	67DM8-323	AFH84-58-05	DD47T	FP483.4	THQ-4383	TVL-4739.5 -TVA-1230	
D	60	300							
D	3	350							
D	100	50							
C4	40	300	67B4-E	PRH8S80	BR403E	TC58	TD-40-350	TVA-1521	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.22	300V		P588N-22		CUB32P22	2DP-4-224	GEM-2022	2TM-P22
C8	39	NPO	5%	Note 1	TCZ-39	CUQ39C		CMO-439	10TCC-Q39
C7	14	NPO	5%		TCZ-15	CUQ15C		CMO-415	10TCC-Q15
C8	1-12								
C9	1.0	100V		P588N-1.0		CUB2W1		GEM-31	2TM-M1
C10	1500			B2D-0015	BD-152	BYA10D15	CCD-152	B-218	5HK-D15
C11	680			B2D-0681	BD-681	BYA10T68	CCD-681	B-383	10TS-T68
C13	580	N3300	5%	PL #685D2-250				-	
C13	5000			B2D-0005	BD-502	BYA10D5	CCD-502	B-350	5HK-D50
C14	4700			B2D-0047	BD-472	BYA10D47M	CCD-472	B-347	5HK-D47
C15	4.7	NPO	5%	NPO-SE 4.7	CU5Y4C	CUY5C	CYO-4S7	CMO-347	10TCC-Y47
C16	6.8		10%	TCZ-6R8	CU5Y68C	CUY5C	CYO-6R8	CMO-368	10TCC-Y68
C17	4700			B2D-0047	BD-472	BYA10T82	CCD-472	B-347	5HK-D47
C18	6.8		10%	NPO-SE 6.8	TCZ-6R8	CU5Y68C	CCD-6R8	CMO-368	10TCC-Y68
C19	.1	400V		P488N-1	CU5Z4C	B2P-4-104	GEM-401	4TM-P1	
C20	.022	600V	10%	V84C8222-10%		PM8S22	SDP-2-223	GEM-1523	6TM-S22
C21	.047	300V		P288N-047	DD-503	CUB5S47	SDP-2-473	GEM-2547	6TM-S47
C23	.047	1000V		P108N-047		CUB10S47	1SDP-5-473	GEM-10147	10TM-S47
C25	.1	400V		P488N-1	DF-104	CUB4P1	SDP-4-104	GEM-401	4TM-P1
C34	1000	2000V		EVD-30-1000	D2SG-102	HVB20S1	3CCD-102	3SV-2S3	30GA-D10
C26	1000			B2D-001	BD-023	BYA10D1	CCD-102	B-20	5HK-D10
C26	1000			B2D-001	BD-102	BYA10D1	CCD-102	B-350	5HK-D20
C27	4700			B2D-0047	BD-472	BYA10D47M	CCD-472	B-347	5HK-D47
C28	1000			B2D-001	BD-102	BYA10D1	CCD-102	B-350	5HK-D20
C29	.047	300V		P288N-047	DD-503	BC2S47J	4DP-4-473	ACE-S47	3ZE-S47
C30	10000			B2P-01	BD-103	BYA10E1	CCD-103	B-20	5HK-E10
C31	3300			B2D-0033	BD-333	BYA10D33	CCD-332	B-333	5HK-D33
C32	10000			B2D-001	BD-103	BYA10D1	CCD-103	B-20	5HK-D10
C33	1000	1600V		DAC-37	DDE6-102	BYE16S	16DP-3-103	UAC-150	BL-S50
C34	1000			B2D-001	BD-102	BYA10D1	CCD-102	B-350	5HK-D20
C35	1000			B2P-01	BD-103	BYA10E	CCD-103	B-20	5HK-S50
C36	3300			B2D-0033	BD-333	BYA10D33	CCD-332	B-333	5HK-D33
C37	470			B2D-0047	BD-471	BYA20T47	CCD-471	B-347	10TS-T47
C38	100	NPO	5%		CW7C	DTZ-100		B-347	10TCC-T10
C38	30000			B2P-03	BD-303	BYB40S	CCD-303	B-120	5HK-S20
C40	1000			B2P-01	BD-102	BYA10E	CCD-102	B-20	5HK-D50
C41	.023	1000V	10%			DP68S823	1SDP-4-223	GEM-10123	10TM-S23
C42	680			B2D-0068	BD-681	BYA10T68	CCD-681	B-388	10TS-T68
C43	.1	1000V		P108N-1		CUB10F1		GEM-1001	10TM-P1
C44	.038	600V	10%	P596C838		DP68S838	SDP-3-359	GEM-1014	6TM-S6
C45	.1	1000V		P108N-1		CUB10F1		GEM-1001	10TM-P1
C46	.08	600V		P596C8	DE-103	CUB6S	SDP-3-103	GEM-601	6TM-S
C47	3300			B2D-0022	BD-332	BYA10D32	CCD-332	B-323	5HK-D32
C48	.0068	1600V		P1648C068	DDE6-702	BYE16S	16DP-3-702	GEM-41268	MD-D63
C49	1000		10%	DI-1000	BD-102	5R51C	CCD-102	GP20	10TS-D20
C50	1000		10%	DI-1000	BD-102	5R52C	CCD-102	GP20	10TS-D20
C51	2200			B2D-0022	BD-222	BYA10D22	CCD-223	B-323	5HK-D22
C52	.047	300V		P288C47	DD-503	BC2S47J	4DP-4-473	ACE-S47	3ZE-S47
C53	3900		10%	1464-0039		1R3D39	CM-39D-393K	MC2461.5	MS-339
C54	3900		10%	1469-00062		5R57S6	CM-19H-682K	MC8561	MS-352
C55	680		10%	1469-00068		5R57S6	CM-19H-682K	MC2349	MS-368
C57	100	NPO		B2D-0047	DD-472	BYA10T47M	CCD-472	B-347	5HK-D47
C58	100	N1500		PL #65D10-84			7CL-100	-	
C59	.047	600V		P668N-047	DD-503	CUB6S47	SDP-3-473	GEM-6147	6TM-S47
C60	.015	1600V	5%	PL #648D3-43			HDP-4-153	-	
C61	.047	600V		P668N-047	DD-503	CUB6S47	SDP-3-473	GEM-6147	
C62	100	4000V	N1500 10%	PL #65D10-212					
C63	1000			B2P-001	BD-103	BYA10E	CCD-102	B-20	5HK-D10
C64	1000			B2P-001	BD-102	BYA10E	CCD-103	B-20	5HK-D50
C64	830		Note 1	DI-830	BD-681	BYA10T82	CCD-821	B-383	10TS-T82
C65	830			DI-830	BD-681	BYA10T82	CCD-821	B-383	10TS-T82
C66	830			DI-830	BD-681	BYA10T82	CCD-821	B-383	10TS-T82
C67	830			DI-830	BD-681	BYA10T82	CCD-821	B-383	10TS-T82
C68	830			DI-830	BD-681	BYA10T82	CCD-821	B-383	10TS-T82
C69	.1	600V		P488N-1	DF-104	CUB6P1	SDP-4-104	GEM-601	6TM-P1
C70	.047	600V		P668N-047	DD-503	CUB6S47	SDP-3-473	GEM-6147	6TM-S47
C71	.047	1000V		P108N-047		CUB10S47	1SDP-5-473	GEM-10147	10TM-S47

Note 1: May not be used in some versions.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	WATTS	ADMIRAL PART No.	REPLACEMENT DATA CENTRALAB PART No.	CLAROSTAT PART No.	CTS - IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	100K		75B1-36					Brightness Volume
B	2meg tap				RTV-712			
C	Switch							Power Off-On Contrast
R2A	25K		75D20-122	AB-26	A47-25K-S	BH-120	U29	
B	Shaft			AK-9	R8-3/16	SK9	D8-37	
R3A	10K		75D20-130	AB-18	A47-10K-S	BH-118	TA1S3L	Horiz. Hold
B	Shaft			AK-9	R8-3/16	SK9	D8-37	
R4A	250K		75D20-120	AB-26	A47-250K-S	BH-120	U48	Vert. Hold
B	Shaft			AK-9	R8-3/16	SK9	D8-37	
R5A	100K		75D20-118	AB-26	B47-100K-S	BH-126	PTA9AL	AGC
B	Shaft			AK-19	Not Req.	TM4	Not Req.	
R6A	750Ω		75D20-124	TT-423	B47-750-S	BH-108	PTA7SLL	Vert. Linearity
B	Smeg	½		Not Req.	Not Req.	TM4	Not Req.	
R7	Smeg	½	75D20-119	TT-97	B47-5meg-S	HLC5	PTA9SL	Height

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R8	18meg		R38	8200Ω		R48	390Ω 1W	
R9	5.6meg		R39	470K		R49	100Ω ①	
R10	1. 5meg		R40	100K		R50	100Ω ①	
R11	1meg		R41	560Ω		R51	390Ω 1W ②	
R12	1000Ω		R42	120K		R52	3.4Ω (Cold)	PL #6A37
R13	12K		R43	910K		R53	120K 1W	
R14	43Ω		R44	150Ω		R54	2. 5meg	
R15	470Ω		R45	1. 5meg		R55	100K 1W	
R16	150Ω		R46	330Ω 2W		R56	680K	
R17	470MΩ		R47	8200Ω 2W	IRC# PW5-82000	R57	680K	
R18	100Ω		R48	1meg		R58	1meg	
R19	56000Ω 7W	IRC #PW50-56000 (Pt. #61B34-743)	R49	10K 2W	IRC# PW5-10K03	R59	100K	
R20	33K		R50	47K		R60	12K	
R21	56K		R51	1meg		R61	1200Ω	
R22	8200Ω		R52	68000 1W		R62	18K	
R23	33K		R53	33K		R63	10K	
R24	56K		R54	1300Ω		R64	18K	
R25	8200Ω		R55	18K		R65	18K	
R26	33K 1W		R56	47K		R66	18K	
R27	180K		R57	330K		R67	100Ω	
R28	120K		R58	68K		R68	1meg	
R29	33K		R59	33K		R69	15K 7W	IRC# PW5-15K0
R30	2. 5meg		R60	1. 5meg ①		R90	1.0Ω	
R31	270K		R61	2. 7meg		R91	56000 4W	IRC# PW5-56K00
R32	470K		R62	2. 5meg		R92	22K 5W	IRC# PW5-22K0
R33	120K		R63	1. 5meg		R93	390Ω	
R34	330K		R64	68K		R94	1000Ω 3W ③	
R35	470K		R65	100K		R97	10Ω 10W	IRC #3C10-100 (Pt. #61B1-54)
R36	100K		R66	18K		R96	5Ω 5W ③	IRC #3C5-500 (Pt. #61B33-34)
R37	100K		R67	82K 1W		R97	100K	

① Run 10 & 11 see 1meg in this application.
② Early production models use 220Ω in this application.
③ Used in later production models (between S59 & S70 are 100Ω).
④ Chassis 15GU3B uses 300Ω, 5 watt in this application (Pt. #6B31-47).
⑤ Chassis 15GU3B uses 47Ω, 10 watt in this application (Pt. #6B35-25).

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ADMIRAL PART No.	REPLACEMENT DATA	NOTES
XG	Whip Antenna Isolation	4700mmf, 7500 v. Smeg	63B20-3	Centralab CC-490 Sprague AC1-2	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ADMIRAL PART No.	Merit PART No.	Miller PART No.	Rem PART No.	NOTES
L1	RF Choke	①				
L2	47.25MC Trap Coil	72B37-3	BC-562	4604		
L3	1st Video IF	72C33-41				
L4	2nd Video IF	72C132-43				
L5	3rd Video IF	72B207-3				
L6	RF Choke	72B31-4	BC-566	4632		11uh
L7	Band Peaking Coil	72B31-20	TV-302	6176	VP-9	100uh
L8	RF Choke	72B31-3	TV-193	6636		26uh
L8A	4.5MC Trap	72C185-3				
B	1st Sound IF					
L10	Series Peaking Coil	72B5-28 ②				
L11	Shunt Peaking Coil	72B5-34	TV-307	6156		680uh
L12A	Phase Shift Coil	72B200-1				
B	2nd Sound IF					
L13	Quadrature Coil	72B132-37				
L14	Fil. Choke	72B37-2	BC-562	4604	VP-9	1. 4uh
L15	Fil. Choke	72B37-2	BC-562	4604	VP-9	1. 4uh
L16	Fil. Choke	72B37-2	BC-562	4604	VP-9	1. 4uh
L17	Line Choke	72B31-1				68uh

① May not be used in some versions. ② Wound on 1SK Resistor.

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA ADMIRAL PART No.	Merit PART No.	Miller PART No.	Rem PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L16	Horizontal Lock	94D17-14		6	"			82-16	

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	INDUCTANCE DC RES @ CURRENT 1000 ~/s	REPLACEMENT DATA ADMIRAL PART No.	Merit PART No.	Rem PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L19	.250A	25Ω .8 Hy.	74D18-24 ①			C-2343	26C44	C-27X	

① Alternate Part #74J18-33

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA ADMIRAL PART No.	Merit PART No.	Rem PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	Vert. Output	79C43-30		V3H9				A-140X
	Alt. Vert. Output	79B43-30						
	Yoke Horiz. (17, 21MZ) (14"T) Vert. (14, 21MZ)	94D18-3 ①		Y-U10 ③ ④		DY-37A ③	Y-92 ③④	Y-60-1 ③
	Rear Cover and Centering Device	94C152-3						
	Horiz. Output	79D83-5						D-17I *
T2								
T3								

① Less centering device and rear cover. ② Requires new rear cover and centering device.
③ Connect Terminal #10 to Yoke Plug Pin #6. ④ Use original Yoke Damping Network if necessary.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

ORIGINAL TERMINAL CONNECTIONS	Merit Replacement Connections	Rem Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
5						5
6						6
7						YCT
8						7
3						8
2						3
1						1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	SEC.	REPLACEMENT DATA ADMIRAL PART No.	Merit PART No.	Rem PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	3400Ω	3-4Ω	79D35-58	A-3018	A1J-804	A-3333	36H53	S-13X

SPEAKER

ITEM No.	TYPE SIZE	FIELD	REPLACEMENT DATA V. C. IMP.	ADMIRAL PART No.	GUAM PART No.	NOTES
SP1	3" x 5"	PM	3-4Ω	78C58-3	35A05	

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	ADMIRAL PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	250A	93B12-1 *	BJR504 *	1N1763 *	F6 *	SR506 *	* Silicon Type
M2	250A	93B12-1 *	BJR506 *	1N1765 *	F6 *	SR506 *	† Dual Selenium Type
M3		93B6-6 †	BJR15 †				

CRYSTAL DIODES

ITEM No.	REPLACEMENT DATA CRBC TYPE	ADMIRAL	CBS	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M4	1N87A		1N87A	1N87A	1N87A	Video Det. (Pigtail)
	1N87		1N87	1N87	1N87	Alternate

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M5	Tuner	94E163-1	VHF, STANDARD COIL REPLACEMENT Type #GC8-4231-A
	Tuner	94E163-10	VHF with UHF Provisions
	Tuner	94E173-1	UHF
	Antenna	89C355-1	300 REPLACEMENT Type #TA-370
M6	Circuit Breaker	94H17-4	
M7	Magnet	94C152-2	Centering Device
	Printed Board	14K256-2	

ADMIRAL CHASSIS 15GU3B, 15GU3B

FOLDER 1

PARTS LIST AND DESCRIPTIONS (Continued)

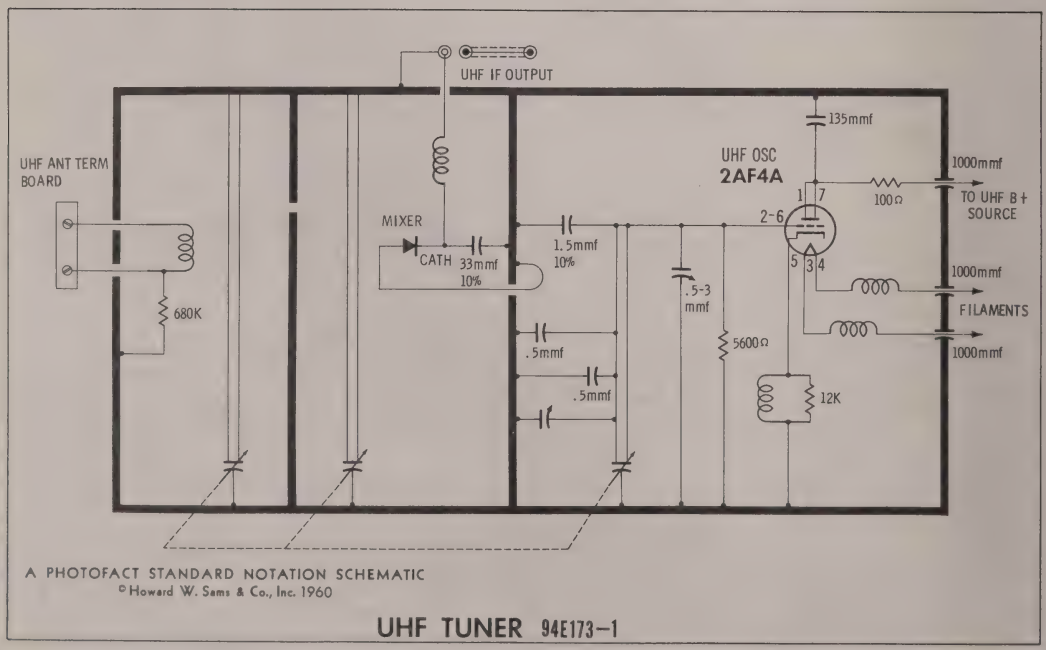
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	21D131-1	Tinted
Knob	33C391-1	Channel Selector, VHF, White, Models PL19J131, PL19J133, PL19J135, PL19J141, PL19J149
Knob	33C391-4	Channel Selector, VHF, Gray, Model PL19J140
Knob	33C391-3	Channel Selector, VHF/UHF, White, Models PL19UJ131, PL19UJ133, PL19UJ135, PL19UJ141, PL19UJ149
Knob	33C391-6	Channel Selector, VHF/UHF, Gray, Model PL19UJ140
Knob	33D340-8	Fine Tuning, Clear, Models PL19J131, PL19J133, PL19J135
Knob	33D340-5	Fine Tuning, Clear, Models PL19J140, PL19J141, PL19J149
Knob	33D340-12	Fine Tuning and Channel Selector, UHF, White, Models PL19UJ131, PL19UJ133, PL19UJ135, PL19UJ141, PL19UJ149
Knob	33D340-15	Fine Tuning and Channel Selector, UHF, Gray, Model PL19UJ140
Knob	33C391-2	Volume, White, Models PL19J131, PL19J133, PL19J135, PL19J141, PL19J149
Knob	33C391-5	Volume, Gray, Model PL19J140
Knob	33D340-6	Brightness
Knob	33B345-4	Contrast, Vertical Hold, Horizontal Hold
Cabinet	750D256-1	Brown & White, Models PL19J131, PL19UJ131
Cabinet	750D256-2	Yellow & White, PL19J133, PL19UJ133
Cabinet	750D256-3	Green & White, PL19J135, PL19UJ135
Cabinet	750D256-4	Black & White, PL19J140, PL19UJ140
Cabinet	750D256-5	Tan & White, PL19J141, PL19UJ141
Cabinet	750D256-6	White, Models PL19J149, PL19UJ149
Handle	37C196-7	White, with Mounting Plate and Rings, Models PL19J131, PL19UJ131, PL19J133, PL19UJ133, PL19J135, PL19UJ135, PL19J141, PL19UJ141, PL19J149, PL19UJ149
Handle	37C196-8	Black with Mounting Plate and Rings, Models PL19J140, PL19UJ140

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



UHF TUNER 94E173-1

TUNER PARTS LIST AND DESCRIPTIONS

94E163-1

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC / RAYTHEON / SYLVANIA)
V201	RF Amp.	2CY5
V202	Mixer - Osc.	5CG8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C202	6.8 10%		NPO-SI 6.8	TCZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C203	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C204	.33 10%							
C205	1000		EF-001	MFT-1000		CCF-102	CT280A	
C206								
C207	100		EF-0001	MFT-100				
C208	1000		BPD-001	DD-102		CCD-102	B-210	5HK-D10
C209								
C210	10		DI-10	DD-10	L10Q1	CCD-100	GP410	10TS-Q10
C211	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C212	1000		EF-001	MFT-1000		CCF-102	CT280A	
C213	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C214	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C215	1000		EF-001	MFT-1000		CCF-102	CT280A	
C216	1000		EF-001	MFT-1000		CCF-102	CT280A	
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	
C218	1000		EF-001	MFT-1000		CCF-102	CT280A	
C219	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C220	1000		EF-001	MFT-1000		CCF-102	CT280A	
C221		Pt. #94E163-59						

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	15K	
R202	22K	
R203	10K	
R204	18K 1W	(22K) *
R205	22K	
R206	1meg	
R207	1000Ω	
R208	10K	
R209	22K	
R210	39K	

* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ADMIRAL PART No.	REPLACEMENT DATA
K201	Antenna Filter	4700mmf, .75-1.5meg	63B10-3 ①	Centralab RC-490

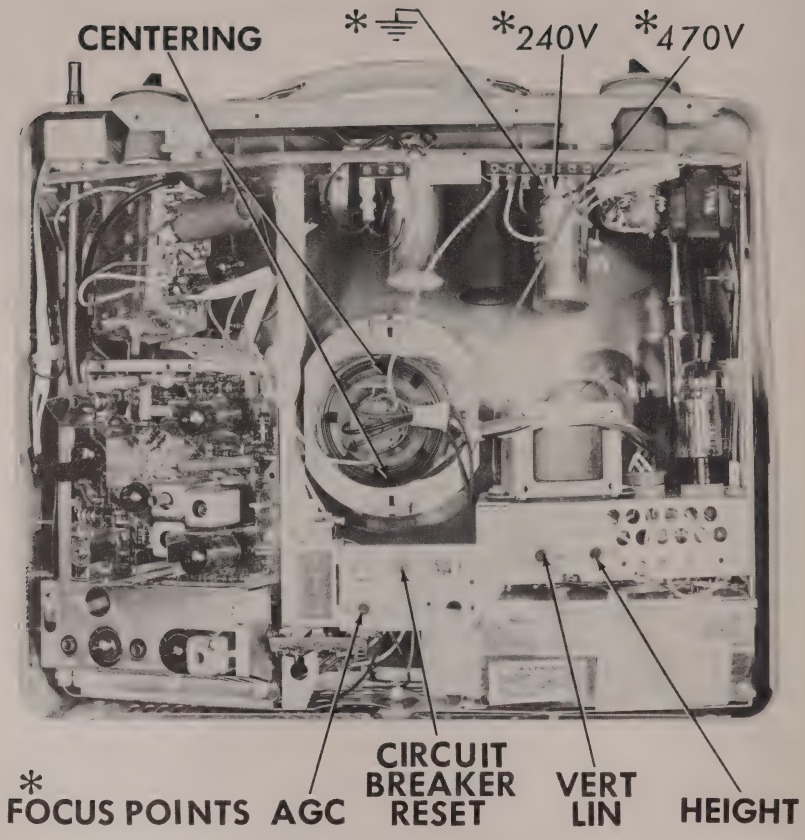
① Some versions may use Component Combination 470mmf, .3-1meg (Part #63B10-4).

COILS (RF-IF)

ITEM No.	USE	ADMIRAL PART No.	NOTES
L201	Ant. Trans.	94E163-77	
L202	IF Trap Coil	94E163-82	
L203A	Ant., RF & Osc. Coils	94E163-83	Channel 2
B	"	94E163-84	Channel 3
C	"	94E163-85	Channel 4
D	"	94E163-86	Channel 5
E	"	94E163-87	Channel 6
F	"	94E163-88	Channel 7
G	"	94E163-89	Channel 8
L203H	Ant, RF & Osc. Coils	94E163-90	Channel 9
I	"	94E163-91	Channel 10
J	"	94E163-92	Channel 11
K	"	94E163-93	Channel 12
L	"	94E163-94	Channel 13
L204	RF Choke	94E163-95	
L205	RF Choke	94E163-96	
L206	Mixer Plate Coil	94E163-78	

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
	Shaft	94E163-74	Fine Tuning
	Turret & Shaft Assembly	94E163-103	
	Bottom Cover	94E163-57	



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Set the Horizontal Hold to the center of its range.

Tune in a TV station and adjust the Horizontal Lock Coil slug (B1) until the picture synchronizes horizontally.

Proper adjustment is indicated when it is possible to switch from one channel to another without the picture losing sync.

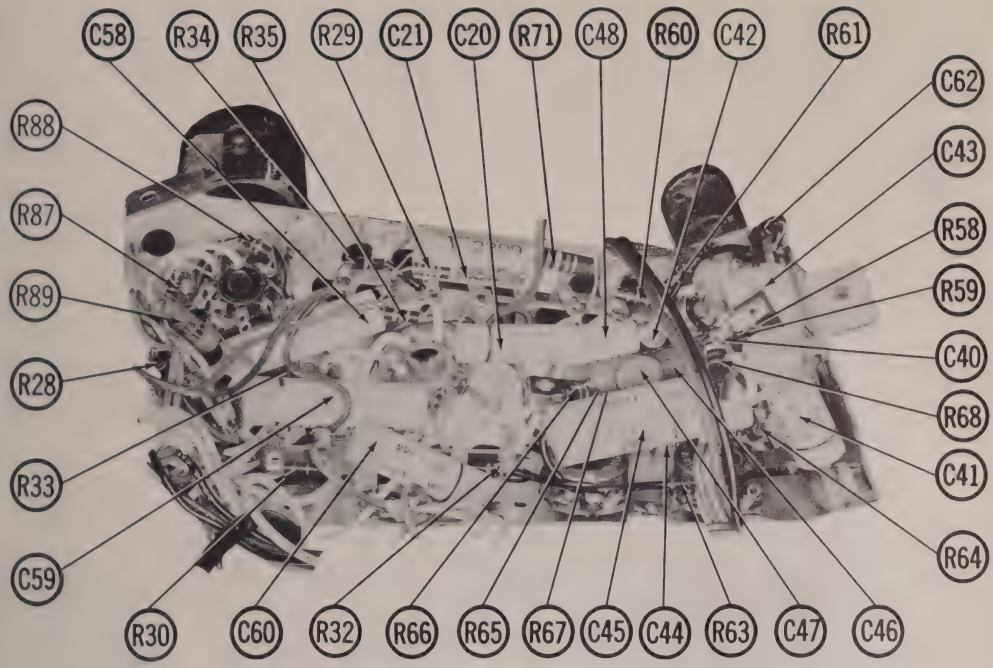
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL PL19J33

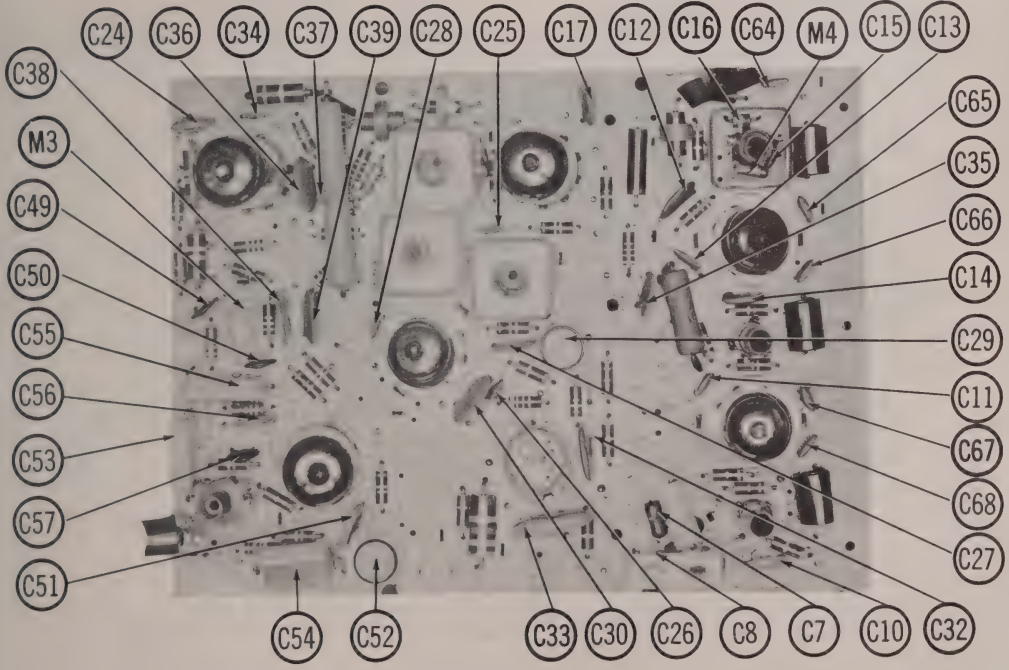
1. Remove 7 metal screws holding rear cover. Remove rear cover.
2. Remove 4 push-on type knobs at top and 3 knobs on side of cabinet.
3. Remove speaker leads, high voltage lead, picture tube socket, and yoke plug.
4. Remove 3 chassis bolts at bottom of chassis. Remove 4 metal screws holding chassis at top of cabinet.
5. Remove chassis.

PICTURE TUBE REMOVAL

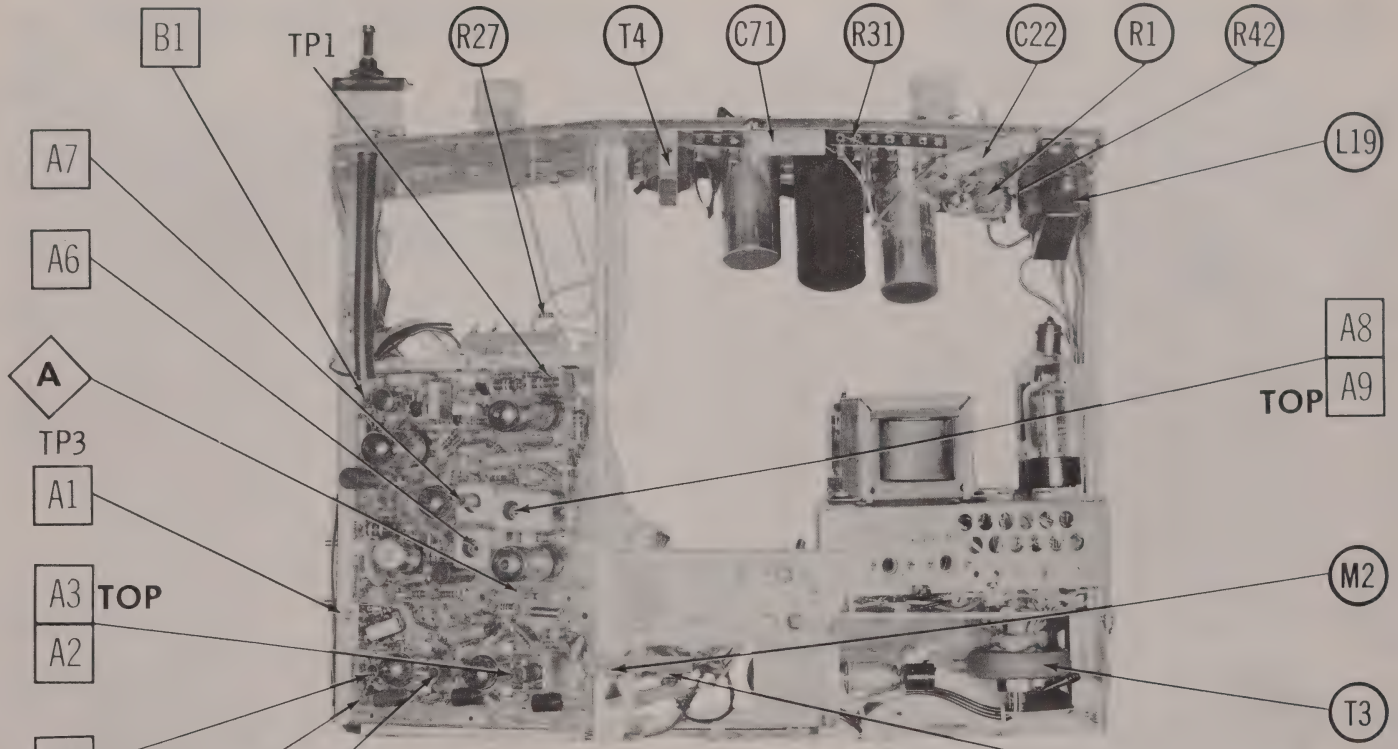
See "Safety Glass Removal", page 1.



VERT. SWEEP & HORIZ: OUTPUT SECTION

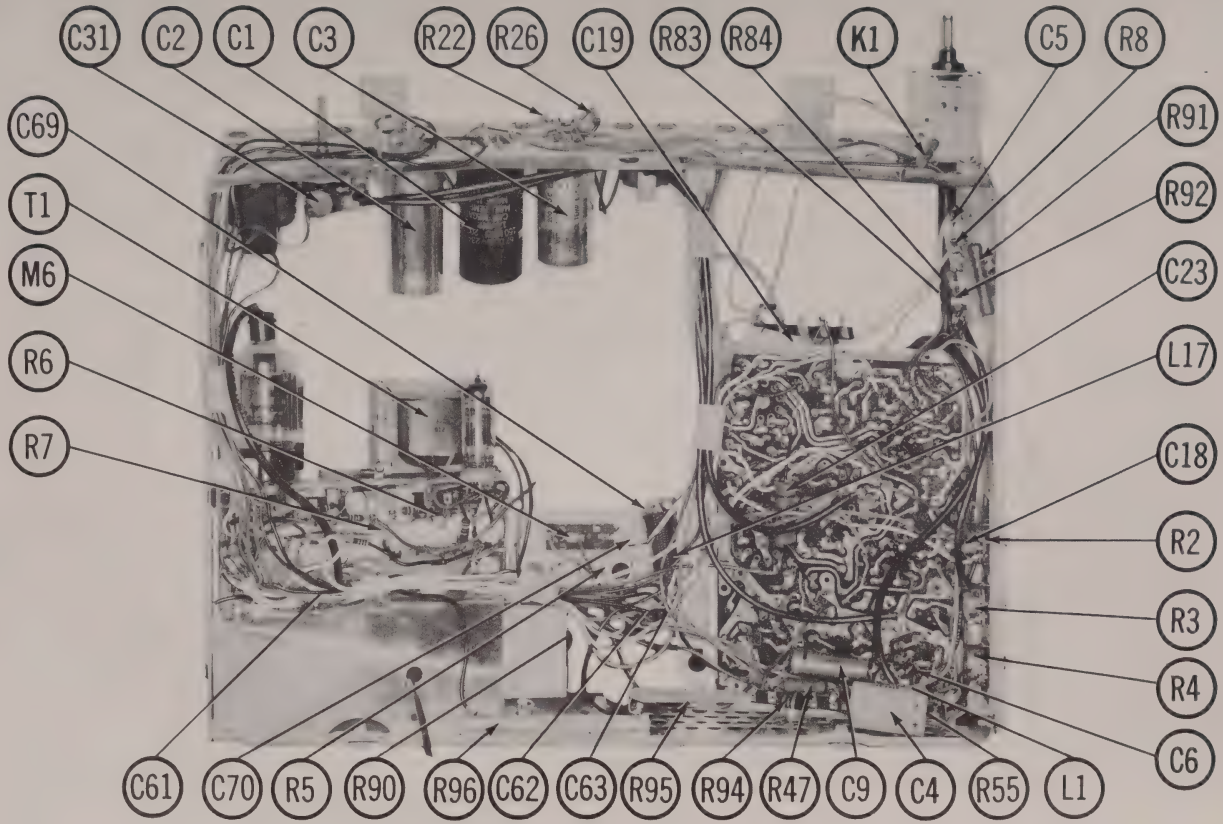


PRINTED BOARD - CAPACITOR & MISC. IDENT.



TP1 .1V RF AGC
TP2 -.3V IF AGC
TP3 -.1V VIDEO OUTPUT GRID

CHASSIS - REAR VIEW



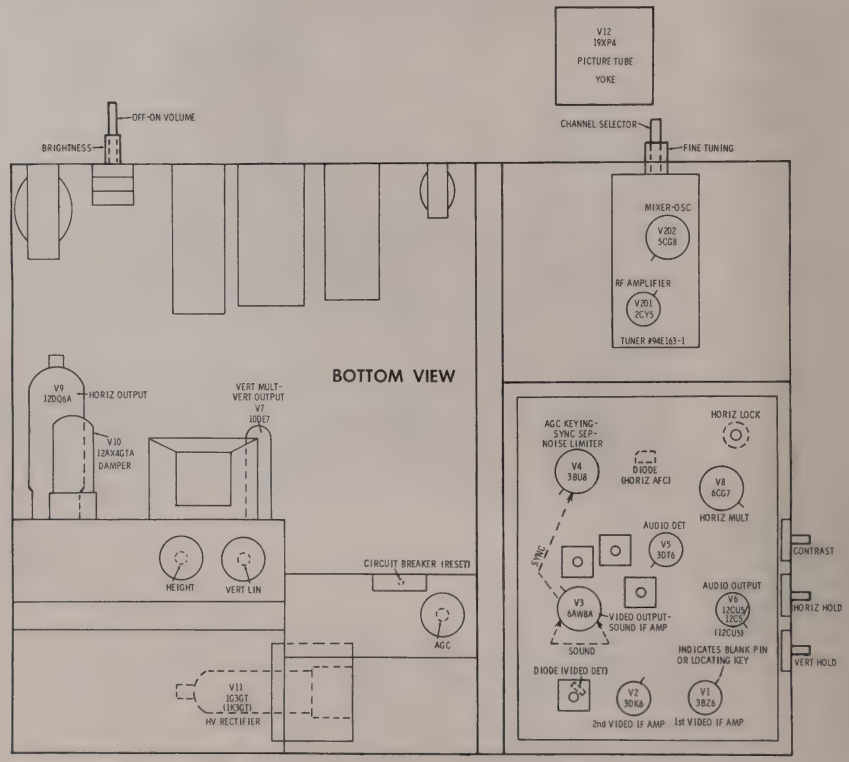
CHASSIS - FRONT VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	150K	43Ω	20Ω	25Ω	▪3900Ω	▪3900Ω	0Ω		
V2	3DK6	0Ω	150Ω	25Ω	30Ω	▪470Ω	▪470Ω	0Ω		
V3	6AW8A	0Ω	100K	▪100K	40Ω	35Ω	0Ω	4800Ω	†33K	†5800Ω
V4	3BU8	▪0Ω	†7000Ω	2.1meg	65Ω	60Ω	†33K	†1meg	†47K	†12meg
V5	3DT6	15Ω	560Ω	60Ω	55Ω	†590K	▪8200Ω	560K		
V6	12CU5 12C5	¶	†800Ω	40Ω	55Ω	NC	†365Ω	†575Ω		
V7	10DE7	†335Ω	2meg	NC	0Ω	15Ω	● ‡2.9meg	1.2meg	●220K	●650Ω
V8	6CG7	†12K	2.8meg	1200Ω	70Ω	65Ω	†82K	● 45K	1200Ω	0Ω
V9	12DQ5A	NC	85Ω	NC	†15K	1meg	TP	70Ω	0Ω	TOP CAP ‡9Ω
V10	12AX4GTA	NC	NC	¶	NC	†35Ω	NC	100Ω	85Ω	
V11	1G3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡390Ω
V12	19XP4	30Ω	39K	‡2.8meg	‡390Ω	NC	NC	● 250K	35Ω	
V201	2CY5	6meg	0Ω	16Ω	15Ω	†5700Ω	†9K	0Ω		
V202	5CG8	39K	▪23K	0Ω	16Ω	20Ω	▪2200Ω	▪11K	0Ω	1meg
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1.
▪ MEASURED FROM 135V SOURCE.
‡ MEASURED FROM PIN 3 OF V10.

NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART

PHOTOFACT® Folder

TRAV-LER MODELS 17P6000, 21K6042, 21T6041 (Ch. 1150-59, -69)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

TRAV-LER MODELS 17P6000, 21K6042, 21T6041 (Ch. 1150-59, -69)

MODEL 17P6000

TRAV-LER MODELS 17P6000, 21K6042, 21T6041 (Ch. 1150-59, -69)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL 17P6000

1. Remove 8 metal screws holding rear cover. Remove rear cover.
2. Remove 4 push-on type knobs.
3. Remove speaker leads, high voltage lead , picture tube socket, and yoke plug.
4. Remove 5 metal screws on each side holding top section of cabinet. Remove top section.
5. Remove 2 screws holding bottom section of cabinet to chassis (one on each side).
6. Remove 4 chassis bolts. Remove chassis.

PICTURE TUBE REMOVAL

1. It is necessary to remove top section of cabinet for picture tube removal. (See "Chassis Removal", steps 1 thru 4).
2. Remove 2 screws holding picture tube mounting bracket at bottom of chassis and 2 screws on each side.
3. Pull picture tube out front.

MODEL 17P6000

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

Care should be exercised when connecting test equipment or physically contacting chassis. Isolation devices employed by manufacturer should be checked and properly connected before returning receiver to owner.

TRADE NAME	TRAV-LER MODELS	CHASSIS
	17P6000	1150-59
	21K6042, 21T6041	1150-69
MANUFACTURER	Trav-Ler Radio & Tele. Corp., 571 West Jackson Blvd., Chicago 6, Illinois	
TYPE SET	Television Receiver	
TUBES	VHF - Thirteen	
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING .94 Amp., 110 Watts @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 8 metal screws holding rear cover. Remove rear cover.
Remove 5 screws on each side holding top section of cabinet. Remove top section. Remove mask and safety glass.

FUSE DEVICE

A 4.7Ω fusible resistor is used for low voltage power supply protection. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up VHF Oscillator, it is necessary to remove top section of cabinet. (See "Disassembly Instructions".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Osc. Coil slug. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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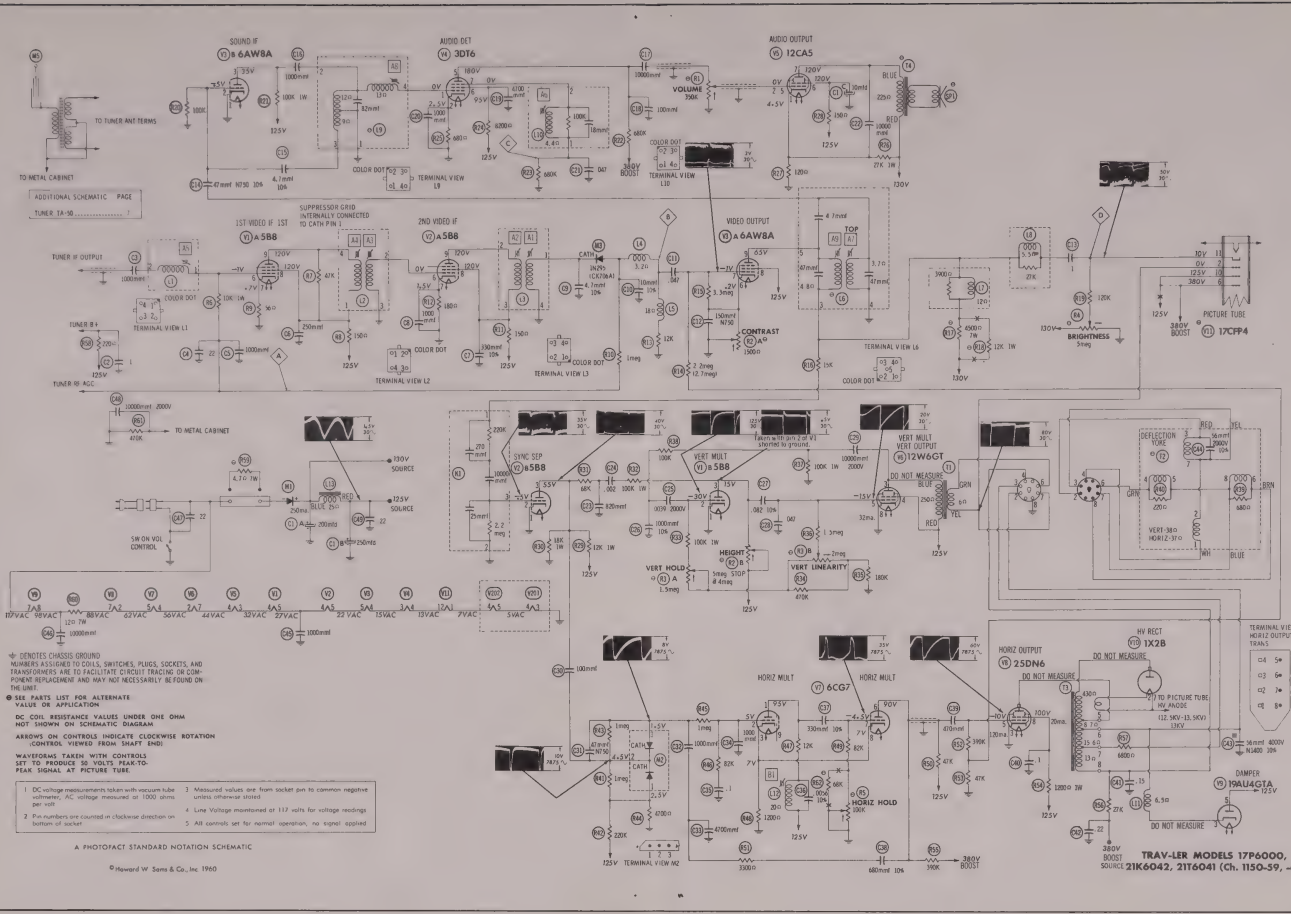
TRAV-LER MODELS 17P6000, 21K6042, 21T6041 (Ch. 1150-59, -69)


SOUND IF
V1 6AW8A
AUDIO DET
V4 3DT6
AUDIO OUTPUT
V5 12CA5
VOLUME
350K
TO TUNER ANT TERMS
TO METAL CABINET
ADDITIONAL SCHEMATIC PAGE
TUNER TA-50
COLOR DOT
TERMINAL VIEW L9
TERMINAL VIEW L10
BLUE
RED
GRN
1ST VIDEO IF
V1 5B8
SUPPRESSOR GRID
INTERNALLY CONNECTED
TO CATH PIN 1
2ND VIDEO IF
V2 5B8
VIDEO OUTPUT
V3 6AW8A
TOP
TUNER IF OUTPUT
TUNER IF I
TUNER IF II
TUNER RF AGC
TERMINAL VIEW L1
TERMINAL VIEW L2
TERMINAL VIEW L3
TERMINAL VIEW L6
CONTRAST
BRIGHTNESS
PICTURE TUBE
V11 17CFP4
SYNC SEP
V7 6SB8
VERT MULT
V1 5B8
VERT MULT
VERT OUTPUT
V6 12W6GT
DO NOT MEASURE
DEFLECTION YOKE
VERT-380
HORIZ-370
HEIGHT
VERT HOLD
VERT LINEARITY
SW ON VOL CONTROL
+130V SOURCE
+125V SOURCE
HORIZ MULT
V7 6CG7
HORIZ OUTPUT
V9 25DN6
HV RECT
V10 1X2B
TERMINAL VIEW HORIZ OUTPUT TRANS
TO PICTURE TUBE HV ANODE
(12.5KV-13.5KV) 13KV
HORIZ HOLD
DAMPER
V8 19AU4GTA
380V BOOST SOURCE
TRAV-LER MODELS 17P6000, 21K6042, 21T6041 (Ch. 1150-59, -69)
V5 V6 V8 V7 V6 V5 V1 V2 V3 V4 V11 V10 V9 1
107VAC 99VAC 88VAC 63VAC 54VAC 44VAC 36VAC 27VAC 22 VAC 15VAC 13VAC 7VAC 5VAC
120 7W
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END).
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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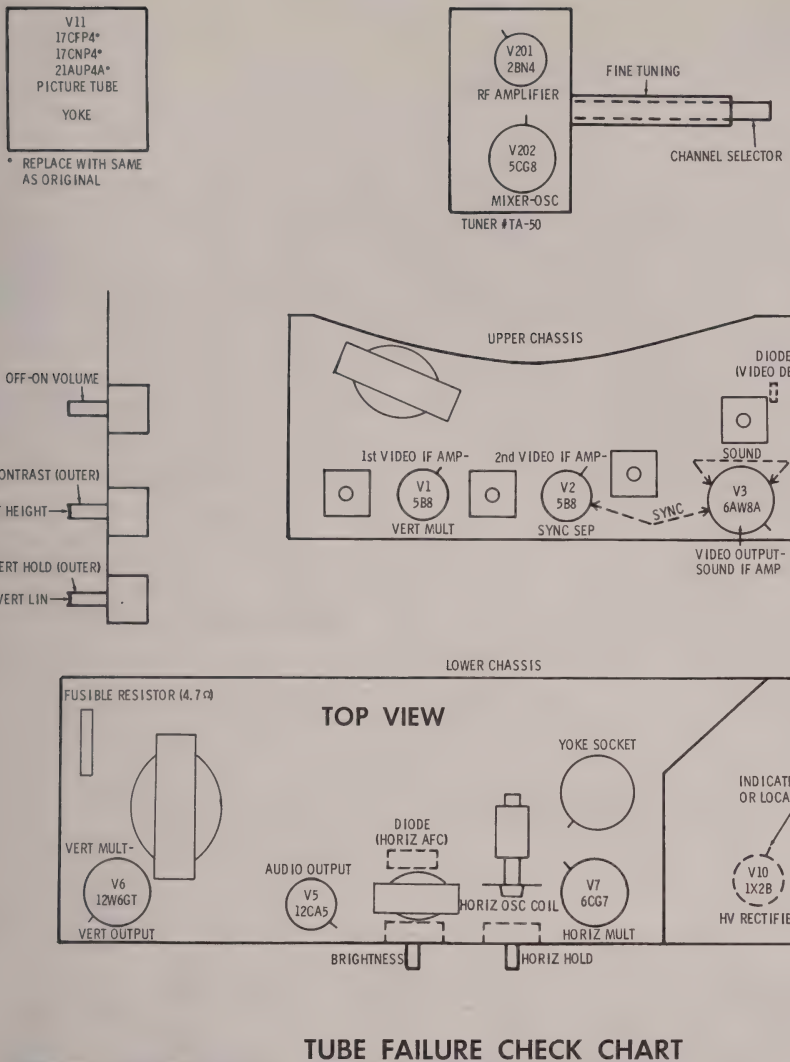
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

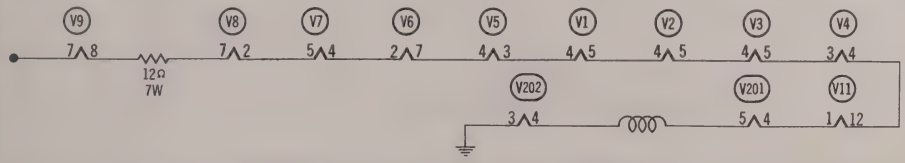
POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor, Rectifier (B+)

SWEEP FAILURE
No raster, has sound V7, V8, V9, V10, V11
No vertical deflection V1, V6
Poor vert. linearity or foldover V1, V6
Poor horiz. linearity or foldover V7, V8, V9
Narrow picture V7, V8, V9, Rectifier (B+)
Vert. off freq. V1, V6
Horiz. off freq. Diode (Horiz. AFC), V7

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, Diode (Video Det.), V3
No pic, no sound, has snow V201, V202
No pic, has sound, has raster V3, V11
Has pic, no sound V3, V4, V5

SYNC FAILURE
No vert. sync V2
No horiz. sync V2
No vert. or horiz. sync V2

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



SET 501 FOLDER 2

TRAV-LER MODELS 17P6000, 21K6042, 21T6041 (Ch. 1150-59, -69)

FOLDER 2

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point Ⓐ . Positive to chassis.
Set the Contrast fully clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44MC	42.75MC 45.75MC	Any non-interfering channel	Vert. Amp. thru 10K to point Ⓑ . Low side to chassis. (Across Video Det. load)	A1, A2, A3, A4, A5, & Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.

SOUND IF ALIGNMENT

Connect an output meter across the speaker voice coil.
Connect the DC probe of the VTVM to point Ⓒ . Common to chassis.
Tune in a strong air signal and adjust A6 for maximum output. If two peaks occur during this adjustment, use the one resulting in the highest meter reading on the VTVM. Reduce the signal strength by disconnecting the antenna.
Adjust A7 and A8 for maximum undistorted audio output. Further reduce the signal by moving the antenna lead further from the terminals and retouch A7 and A8 for maximum undistorted sound. Repeat entire procedure, if necessary.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
2.	.05mfd	High side to point Ⓑ . Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	AC probe to point Ⓓ . Common to chassis. (Use 0-10VAC scale)	A9	Adjust for MINIMUM deflection.

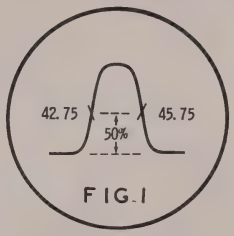
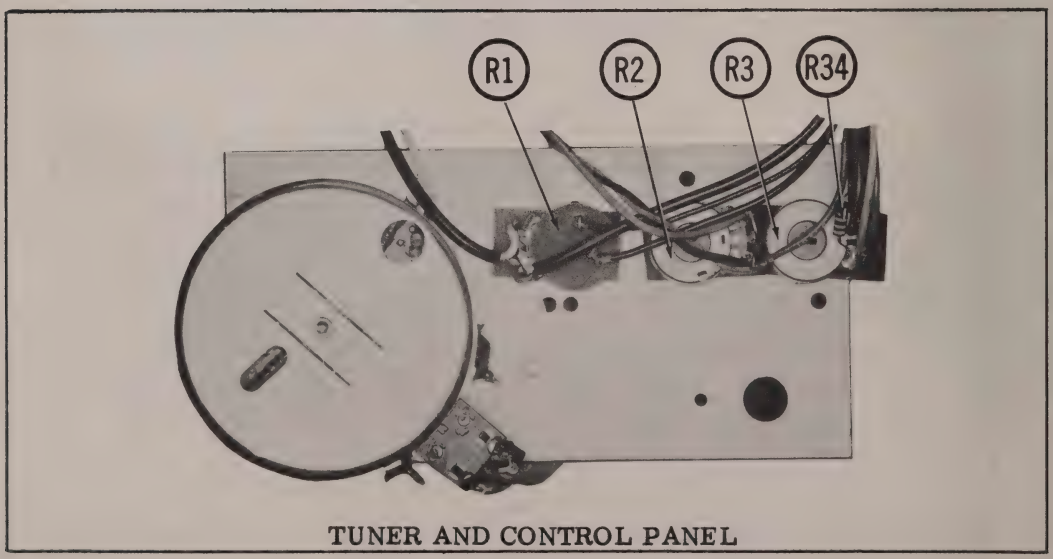
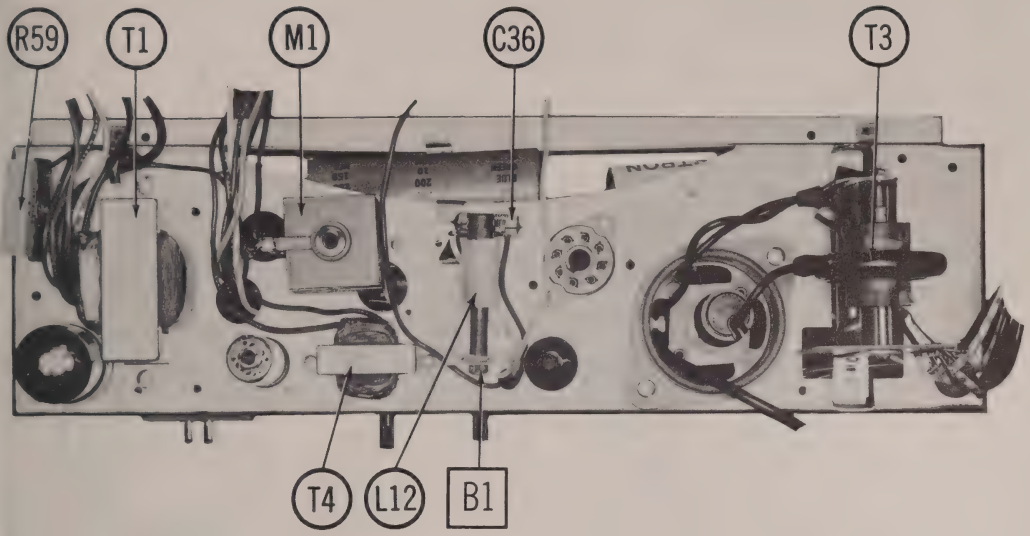


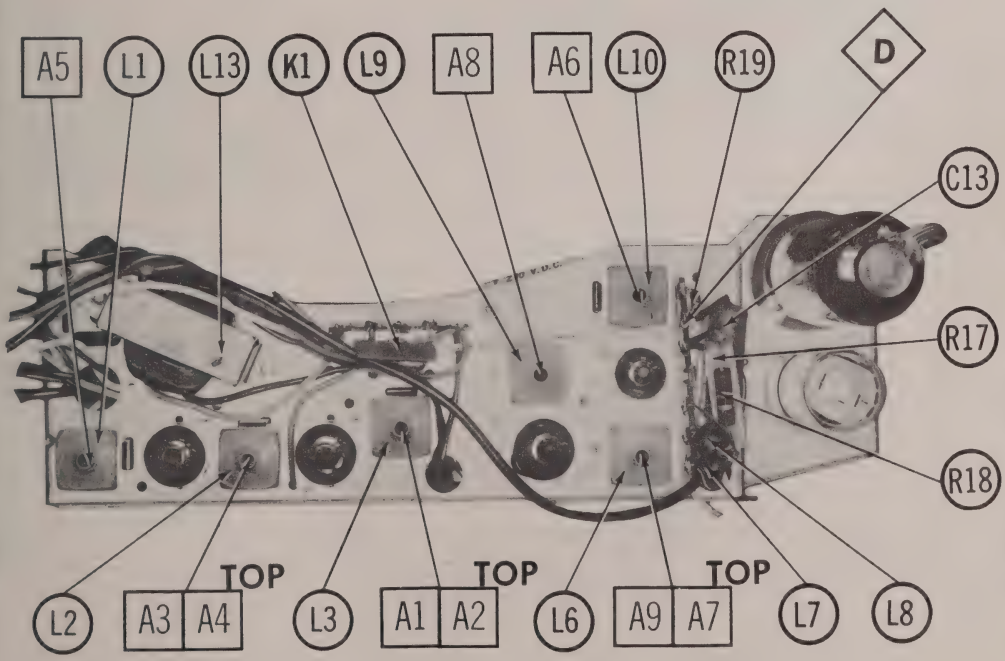
FIG. 1



TUNER AND CONTROL PANEL



LOWER CHASSIS - TOP VIEW



UPPER CHASSIS - TOP VIEW

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A212 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A213, A214, A215..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Set the Fine Tuning to the center of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

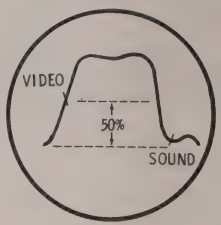


FIG. 201

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Connect the negative lead of a 4.5 volt bias supply to point (T). Positive to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (U). Low side to chassis.	A213, A214, A215	Adjust A213 and A214 for maximum amplitude and symmetry with markers as shown in Fig. 202. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A215 to obtain MINIMUM response on the scope. Restore bias.
3.	"	"	213MC	211.25MC 215.75MC	13	"	A216	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by compressing or expanding coil turns.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

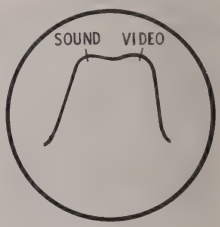
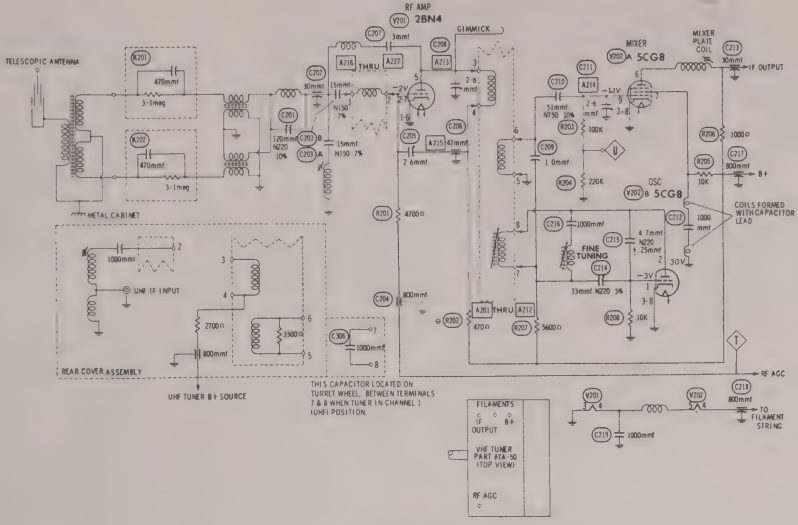


FIG. 202

TUNER TA50



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TUBES

	GENERAL ELECTRIC	RAYTHEON	SYLVANIA			
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amplifier	2BN4	V202	Mixer - Osc.	5CG8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	120 N220 10%					*		10TCR-T12
C202	30							
C203A	15 N150 7%					*		10TCP-Q15
B	15 N150 7%					*		10TCP-Q15
C204	800		EF-001	MFT-1000		CCF-102		
C205	2-6			829-6		VC-3	CT552	
C206	47		EF-000050	MFT-50				
C207	.3							
C208	2-6			829-6		VC-3	CT552	
C209	1		NPO-SI 1.0	TCZ-1		CNO-510	CN0-510	10TCC-V10
C210	51 N750 10%		N750-DI 47	TCN-51	C10Q51U	CCTN-470	CN7-447	10TCU-Q47
C211	2-6			829-6		VC-3	CT552	
C212	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C213	30							
C214	13 N220 5%					*		
C215	4.7 N220 ±.25mmf					*		
C216	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C217	800		EF-001	MFT-1000		CCF-102	CT280A	
C218	800		EF-001	MFT-1000		CCF-102	CT280A	
C219	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	4700Ω	
R202	470Ω	Note 1
R203	100K	

ITEM No.	RATING	REMARKS
R204	220K	
R205	10K	
R206	1000Ω	

ITEM No.	RATING	REMARKS
R207	5600Ω	
R208	10K	

Note 1. Some versions may use 1000Ω in this application.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA
K201	Antenna Isolation	470mmf, .3-1meg		Centralab RC-471 Sprague AC1-1
K202	Antenna Isolation	470mmf, .3-1meg		Centralab RC-471 Sprague AC1-1

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No	* GENERAL ELECTRIC * USE	TYPE	ITEM No	RAYTHEON * SYLVANIA * USE	TYPE
V1	1st Video IF Amp - Vert. Mult.	5D8	V5	Audio Output	12CA5
V2	2nd Video IF Amp. - Sync Sep	5D8	V6	Vert. Mult. - Vert. Output	12W8GT
V3	Video Output - Sound IF Amp.	6AW8A	V7	Horiz. Mult.	6CG7
V4	Audio Det	3DT8	V8	Horiz. Output	HE308
			V9	Damper	1N4148GTA
			V10	HV Rectifier	1X3B

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: TRAV-LER Part No.	GENERAL ELECTRIC Part No.	RCA Part No.	RAYTHEON Part No.	SYLVANIA Part No.	NOTES
V11	17CP4 † / 17CP4A †	17CP4 ①	17CP4 ①	17CP4 ② / 17CP4 ③	17CP4 ② / 17CP4A ③	① Aluminized ② Silver Screen "86"
	21AUP4A *	21AUP4A ①	21AUP4A ①	21AUP4A ②	21AUP4A ③	

† Used in Model 17P6000. Replace with same as original. * Used in Models 21T6041 & 21K6043.

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	VOLT	REPLACEMENT DATA: TRAV-LER Part No	ARROVOX Part No.	CORNELL-DUBILIER Part No.	MALLORY Part No.	PYRAMID Part No.	SPRAGUE Part No.	NOTES
C1A	200	150	EC-79	PR3-G1	BSR7G139	WT23D	CDB-T-1008	TVA-3480	
B	250	150							
C	10	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: ARROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	FILMENCO Part No.	MALLORY Part No.	SPRAGUE Part No.
C2	.1 200V		P388N-1	DF-104	CUB23P	2DP-S-104	GEM-201	27M-P1
C3	1000		BPD-001	DD-102	BYA102E	CCD-102	B-320	5HK-D02
C4	.33 100V		P388N-22		CUB32P3	2DP-S-324	GEM-2023	27M-P23
C5	100		BPD-001	DD-101	BYA101E	CCD-101	B-310	5HK-D01
C6	390		88-350	D6-381	L10T3S	CCD-391	GP33S	10T8-T36
C7	330	10%	DS-330	D3-331	L10T3S	CCD-331	MCB341	10T8-T33
C8	1000		BPD-001	DD-102	BYA102E	CCD-102	B-320	5HK-D02
C9	6, 7	10%	RPD-6E 6, 7	CY6-V7C	CUGV7C	CCV-67C	CMG-647	10TC-V67
C10	10	10%	1469-00001	TC5-10	22R5Q5	CM-1H9-100K	MCB3E5	MB-41
C11	.047 300V		P388N-47	DD-503	CUB34P	4DP-S-473	GEM-4647	27M-P47
C13	150 N750		N750-E 150	TC5-150	C10QT15U	CCT5N-151	CNT-3E5	10TCU-T15
C14	.1 300V		P388N-1	DF-104	CUB23P	2DP-S-104	GEM-203	27M-P1
C15	47 N750	10%	N750-DE 47	DT5N-47	CUQ47U	CCT5N-470	CNT-447	10TCU-Q47
C16	4.7	10%	NPO-SL 4.7	TC5-4R7	C10V47C	CCV5N-4R7	CMG-447	10TCC-V47
C18	1000		BPD-001	DD-102	BYA102E	CCD-102	B-320	5HK-D02
C17	10000		BPD-003	DD-103	BYA103E	CCD-103	B-330	5HK-S03
C19	1000		BPD-001	DD-102	L10T1	CCD-102	GP30D	10T5-T02
C19	4700		BPD-0047	DD-472	BYA1047M	CCD-472	B-347	5HK-D47
C20	1000		BPD-001	DD-102	BYA102E	CCD-102	B-320	5HK-D02
C21	.047 300V		P388N-047	DD-503	CUB34P7	4DP-S-503	GEM-4647	27M-P47
C23	1000		BPD-02	DD-102	L10T2	CCD-102	B-320	5HK-S02
C23	830		DE-830	DD-831	BYA0T82	CCD-821	B-333	10T8-T82
C24	.0047 400V		P488N-003	D6-382	CUB43P	6DP-1-303	GEM-6323	27M-P33
C25	.0039 300V		P884CM-0039	DD-392	DPM3M39	5DP-1-392	GEM-634	27M-D4
C26	100	10%	DE-1000	D3-101	15H2X	CCM-1H9-101	GP33D	10T5-D01
C27	.047 200V	10%			DPM3S82	5DP-S-823		29T-S82
C28	.047 300V		P388N-047	DD-503	CUB34P7	4DP-S-473	GEM-4647	27M-P47
C29	10000 2000V		DAC-37				2HV-110	BL-S02
C30	100		BPD-001	DD-101	L10T1	CCD-101	GP33D	10T5-T10
C31	47 N750		N750-DE 47	DT5N-47	C10Q47C	CCT5N-470	CNT-347	10TCU-Q47
C32	1000		BPD-001	DD-102	BYA102E	CCD-102	B-320	5HK-D02
C33	4700		BPD-0047	DD-472	BYA1047M	CCD-472	B-347	5HK-D47
C34	1000		BPD-001	DD-102	BYA102E	CCD-102	B-320	5HK-D02
C35	.1 300V		P388N-1	DF-104	CUB23P1	2DP-S-104	GEM-203	27M-P1
C36	0068 600V	10%			DPM3M68	6DP-S-683	MC2468	27M-D54
C37	330	10%	1469-00033		22S5T33	CM-1H9-331K	MCB34L	MB-333
C38	680	10%	1469-00068		22S2T68	CM-1H9-681K	MC2H69	MB-168
C39	470	10%	BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10T8-T47
C40	.1	600V	P488N-1	DF-104	CUB43P	6DP-S-104	GEM-643	47M-P1
C41	.15	600V	P488N-15		CUB5P15	6DP-S-154	GEM-6018	47M-P15
C42	.33	600V	P688N-33		CUB6P33	6DP-S-334	GEM-6023	47M-P23
C43	56 4000V N1400 10%	Note 1					2DY-454	
C44	68 2000V 10%						2HV-106	
C45	1000		BPD-001	DD-102	BYA102E	CCD-102	B-320	5HK-D02
C46	10000		BPD-01	DD-103	BYA103E	CCD-103	B-330	5HK-S03
C47	.047 600V		P688N-23		CUB6P23	6DP-S-334	GEM-6023	47M-P23
C48	10000 2000V		DAC-37				2HV-110	BL-S02
C49	.33 600V		P488N-23		CUB4P23	4DP-S-324	GEM-4023	47M-P23

Note 1. Some versions may use 130mmf-3000V-N1400-10% in this application.

CONTROLS

ITEM No.	RATING: RESIST-ANCE	WATTS	REPLACEMENT DATA: TRAV-LER Part No.	CENTRALAB Part No.	CLAROSTAT Part No.	CTS-IRC Part No.	MALLORY Part No.	INSTALLATION NOTES
R1A	350Ω	½	VC-89	B-90-A	A47-500C-2	QB-153	U49	Volume Note 1
B	Shaft			Not Req.	P5-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWK-12	YG-1	Use-36	Power Off-On
R2A	15000	½	VC-304	F1-7				Contrast Note 2
B	Smog	½		R3-S3 *				Height Note 2
	Smog Strap							
R3A	1, Smog	½	VC-303	F1-54				Vert. Hold Note 2
B	Smog	½		R3-67				Vert. Linearity Note 3
R4A	Smog	½	VC-306					Brightness Note 4
B	Shaft							

CONTROLS (cont)

ITEM No.	RATING: RESIST-ANCE	WATTS	REPLACEMENT DATA: TRAV-LER Part No.	CENTRALAB Part No.	CLAROSTAT Part No.	CTS-IRC Part No.	MALLORY Part No.	INSTALLATION NOTES
R5A	100K	½	R-2051	EX-40	847-100K-S	QB-138	PTA51	Horiz. Hold Note 5
B	Shaft			Not Req.	Not Req.	Not Req.	TM4	

Note 1. Chassis 1250-99 uses 500K Volume with Switch (Part #VC-310).
Note 2. Chassis 1250-99 uses 15000 Contrast, Smog Height (Part #VC-309).
Note 3. Chassis 1250-99 uses 1 Smog Vert. Hold, Smog Vert. Linearity (Part #VC-308).
Note 4. Chassis 1250-99 uses Smog Brightness (Part #VC-311).
Note 5. Chassis 1250-99 uses 75K Horiz. Hold (Part #VC-144).
Some versions of Chassis 1250-99 may use 75K Horiz. Hold (Part #VC-144).
† "Concentrikit" Equivalent: K-15 Kit with Base Elements and Shafts: B1B-50K, P57-03S (Panel) B1I-14I, R15-00S (Rear)
†† "Concentrikit" Equivalent: K-15 Kit with Base Elements and Shafts: B1I-13K, P57-03S (Panel) B1I-13S, R15-00S (Rear)
* Use smog resistor in series with right hand terminal (rear section) viewed shaft end terminals down.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R6	10K 1W		R25	680Ω		R44	4700Ω	
R7	47K 1W		R26	47K 1W		R45	1meg	
R8	150Ω		R27	120Ω		R46	82K	
R9	56Ω		R28	150Ω		R47	12K	
R10	1meg		R29	12K 1W		R48	1200Ω	
R11	180Ω		R30	18K 1W		R49	82K	
R12	12K		R31	68K		R50	470Ω	
R13	2.5meg	(2.7meg) *	R33	100K 1W		R51	3300Ω	
R15	3.3meg		R34	100K 1W		R52	390K	
R15	68K		R34	470K		R53	47K	
R17	4800Ω TW	IRC #PW10-4800Ω ①	R35	68K		R54	1200Ω 1W	
R18	120K	①	R36	1.5meg		R55	390K	
R19	120K		R37	100K 1W		R56	27K	
R20	100K		R38	100K		R57	6800Ω	
R21	100K 1W		R39	680Ω		R58	220Ω	
R22	680Ω		R40	220Ω		R59	4.7Ω TW	IRC #FR-5Ω ②
R23	680K		R41	1meg		R60	13Ω TW	IRC #PW10-13Ω
R24	1800Ω		R42	220K		R61	470K	
			R43	1meg		R62	82K	②

* Alternate Value.
① Some versions may use (1) one 3300Ω, TW (Pt. #WR-40) for R17 and R18.
② Fusible Type. Some versions may use 4.7Ω, 5W, fusible (Pt. #F-1Ω).
③ May not be used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: TRAV-LER Part No.	Merit Part No.	Miller Part No.	Rem Part No.	NOTES
L1	1st Video IF	L-150		6331 *		* Disregard Secondary.
L2	2nd Video IF	L-171				
L3	3rd Video IF	L-170				
L4	H.F Choke	L-153	TV-193	6153	17uh	
L6	Shunt Peaking Coil	L-126	TV-107	6156	805uh	
L5A	4.5MC Trap	L-175 ①				
B	1st Sound IF					
L7	Shunt Peaking Coil	L-127 ②				
L8	Series Peaking Coil	L-126 ③				
L9	2nd Sound IF	L-175 ④				
L10	Quadrature Coil	L-10A	TV-154 ▲	146 ▲	SD-5 ▲	▲ Parallel with 100K resistor
L11	Det. Coil	L-19	RC-566	4613		10uh

① Part #L-154 used in some versions. Replace with same as original.
② Part #L-167 used in some versions. Replace with same as original.
③ Wound on 3900Ω Resistor.
④ Wound on 27K Resistor.

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: TRAV-LER Part No.	Merit Part No.	Miller Part No.	Rem Part No.	Rogers Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.	NOTES
L23	Horiz. Osc. Coil	L-132A	TV-162 ①	6310	H-102	RC-110	RTC-8623	HS-7	WLC-3	

① Disregard Tap.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	INDUCTANCE DC RES. @ 1000 ~	REPLACEMENT DATA: TRAV-LER Part No.	Merit Part No.	Rem Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.	NOTES
L13	.230A	25Ω	7 Hy.	FC-9			26C44	C-37X	

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: TRAV-LER Part No.	Merit Part No.	Rem Part No.	Rogers Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.	NOTES
T1	Vert. Output	TR-98A	A-5923 ①				26C70 ②	A-11X ①	
T2	Vert. Yoke Horiz. (35MH) (90°) Vert. (35MH)	L-135	MDF-92 ③	Y90T9/43 ③	PCM3046 ③	DY-36A ③	Y-16 ③	Y-45 & NW23 ③	
	Alt. Yoke	L-135A							
	Rear Cover and Centering Device	M2-T7						YC-112	
	Yoke Clamp	S7-35							
T3	Horiz. Output	TR-97	B53 * ③				HO-366 * ③	F1Y-149 *③	D-525 * ③

① Drill new mounting holes.
② Use original yoke plug and connect same as originalt
③ Use original mounting bracket.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

ORIGINAL TERMINAL CONNECTIONS	Merit Replacement Connections	Rem Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
5		1		1	1	5
6		2	2	2	2	6
7		3	3	3	3	7
8		4	4	4	4	8

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: TRAV-LER Part No.	Merit Part No.	Rem Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.	NOTES
T4	9400Ω	3-4Ω	AT-51 ①	A-3026	AU-805	A-3333	34B53	S-12X	① Alternate (Part #AT-32)

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: TRAV-LER Part No.	QUAM Part No.	NOTES
SP1	4"	PM	3-4Ω	SPK-49	4A0T	Model 17P6000
	5"	PM	3-4Ω	SPK-38	5A0T	Models 21K6042 and 21T6041

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRAV-LER Part No	REPLACEMENT DATA
K1	Sync Sep. Grid	33mmf, 270mmf, 10000mmf, 220K, 2.5meg	CC-96	Aerovox PA-533 Centralab PC-283 Sprague HT-3

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: TRAV-LER Part No.	ITT Part No.	RCA Part No.	SARKES TARZIAN Part No.	SYLVANIA Part No.	NOTES
M1	250A	SR-8 *	1341AH *	1N1764 *	250A *	SR500 *	* Selenium Type
M2		SR-15 †	R2615 †				† Silicon Type
							‡ Dual Selenium Diode

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: TRAV-LER Part No.	CBS Part No.	RAYTHEON Part No.	SYLVANIA Part No.	NOTES
M3	1N295 ①	RC-6	1N295	1N295	1N295	Video Detector (Pigtail) ① Alternate CK-706A

MISCELLANEOUS

ITEM No.	PART NAME	TRAV-LER Part No.	NOTES
M4	Tuner	TA-50	VHF (Complete)
M5	Antenna	L-145	JFD REPLACEMENT TYPE #TA-385
	Magnet	MA-7	Beam Alignment, Models 21K6043 and 21T6041

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

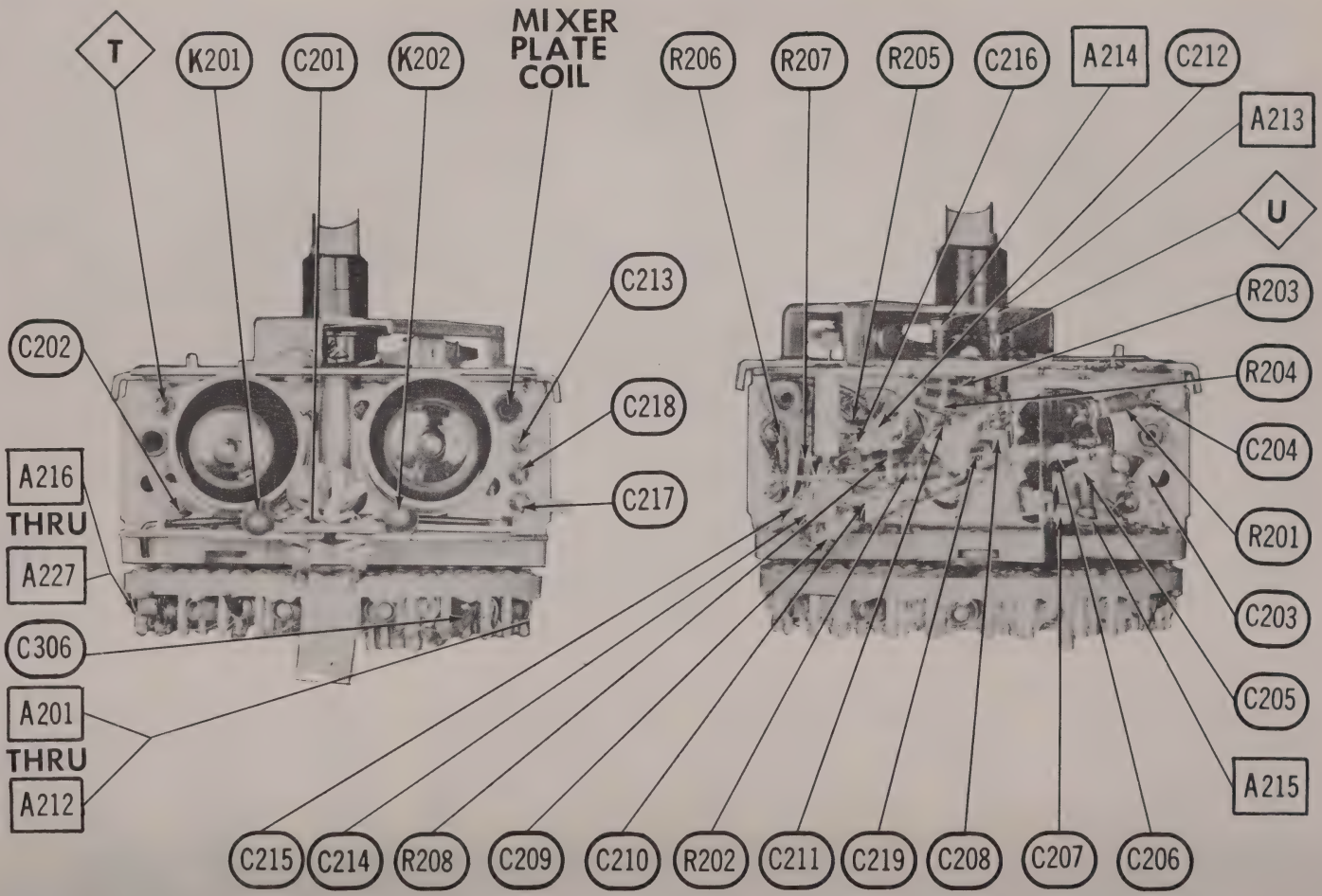
NAME	PART NO	DESCRIPTION
Mask	MP-103	Includes Safety Glass (less), Model 17P6000
Mask	MP-135	Models 21K6042 and 21T6041
Knob	K-151	Channel Selector, Model 17P6000
Knob	K-240	Channel Selector, Models 21K6042 and 21T6041
Knob	K-201	Fine Tuning, Model 17P6000
Knob	K-337	Fine Tuning, Models 21K6043 and 21T6041
Knob	K-353	Volume, Model 17P6000
Knob	K-352	Contrast, Vertical Hold, Model 17P6000
Handle	MS-829	
Cabinet	CA-377	Model 21K6043

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8735 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8474
300Ω Tuner Input Lead	Use BELDEN No. 6225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8454 (Flat) or 8484 (Round) - 4 Conductor 8466 (Round) - 5 Conductor 8468 (Round) - 8 Conductor

TRAV-LER MODELS 17P6000, 21K6042, 21T6041 (Ch. 1150-59, -69)

FOLDER 2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K201
C201
K202
MIXER PLATE COIL
R206
R207
R205
C216
A214
C212
A213
U
R203
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R201
C203
C205
A215
C213
C218
C217
C202
A216
THRU
A227
C306
A201
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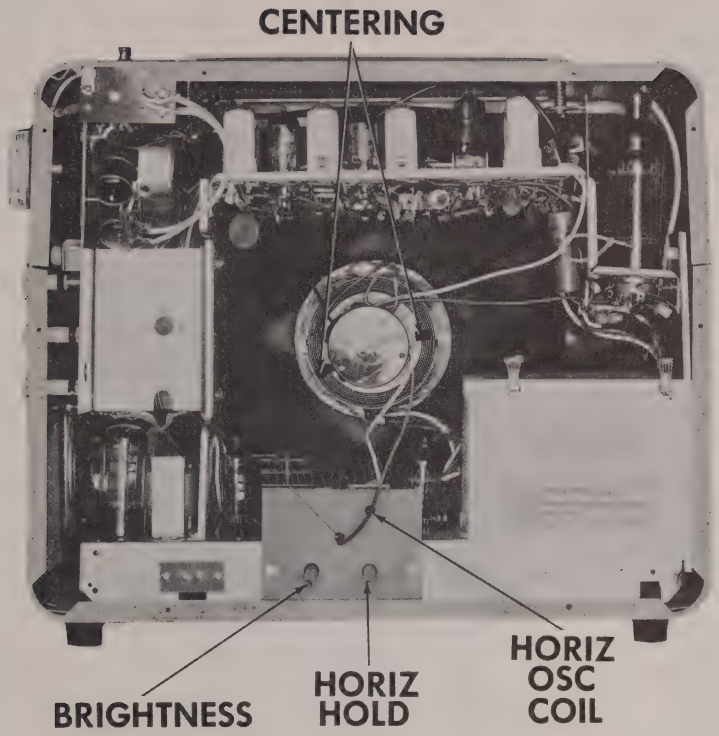
C219
C208
C207
C206

TUNER TA-50



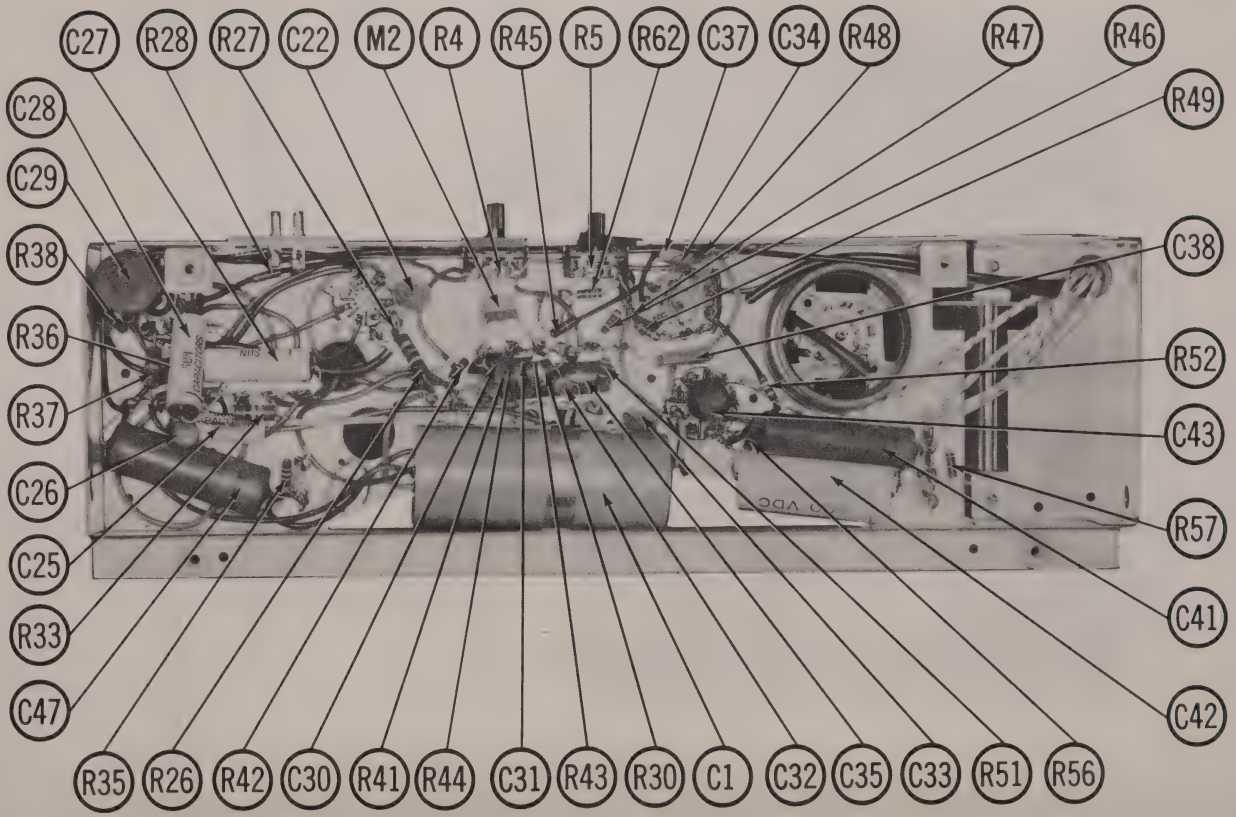
CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

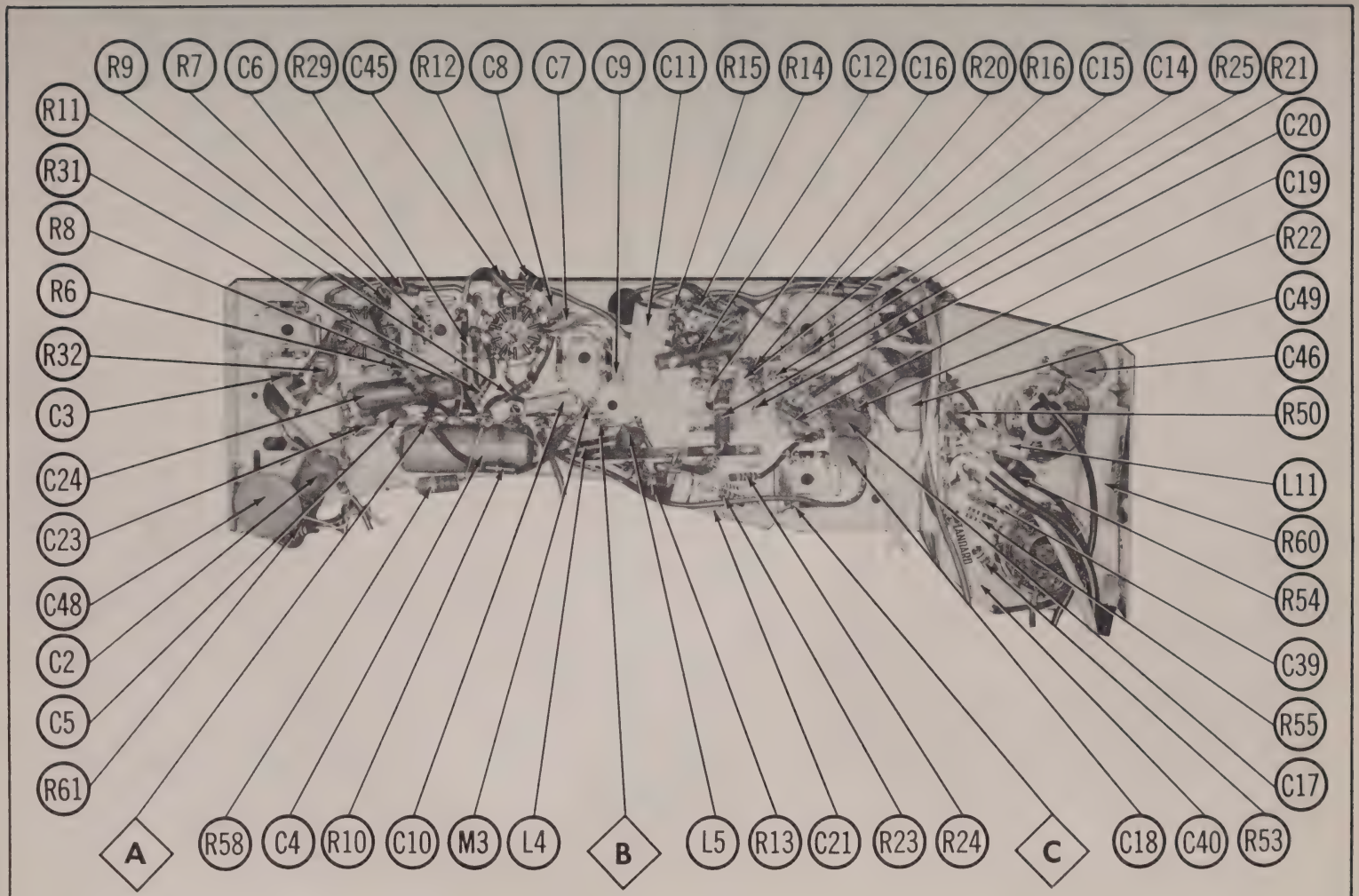
Turn the set on and tune in a station, preferably with a test pattern.

Set the Horizontal Hold Control at the center of its range and adjust the Horizontal Osc. Coil slug (B1) until the picture synchronizes horizontally.

Check Horizontal Sync on other channels and if necessary, retouch B1 for best sync on all channels.



LOWER CHASSIS - BOTTOM VIEW



UPPER CHASSIS - BOTTOM VIEW

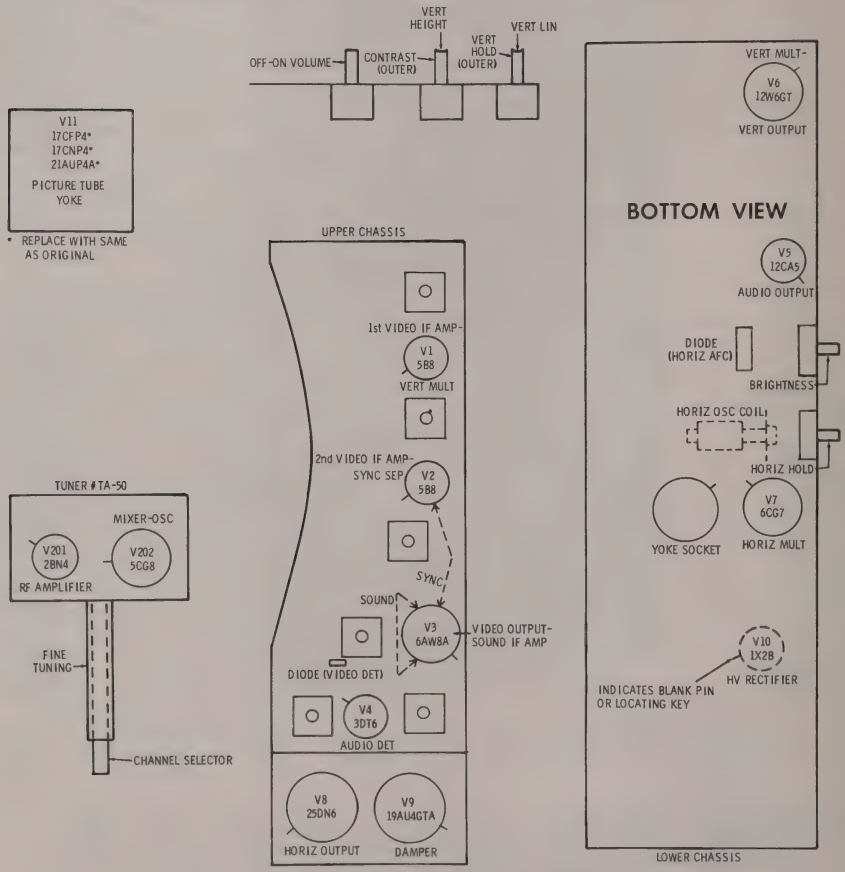
TRAV-LER MODELS 17P6000,
21K6042, 2117041 (Ch. 1150-59, -69)

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	5B8	0Ω	● 1.1meg	● †2meg	45Ω	35Ω	1.2meg	56Ω	†175Ω	†175Ω
V2	5B8	0Ω	2.2meg	†10K	35Ω	25Ω	.1Ω	180Ω	†175Ω	†175Ω
V3	6AW8A	0Ω	100K	†100K	18Ω	25Ω	● 10Ω	● 1.6meg	†25Ω	†3800Ω
V4	3DT6	25Ω	680Ω	18Ω	15Ω	†710K	†8200Ω	680K		
V5	12CA5	120Ω	0Ω	45Ω	60Ω	NC	†175Ω	†225Ω		
V6	12W6GT	NC	75Ω	†275Ω	†25Ω	● 2.8meg	TP	60Ω	0Ω	
V7	6CG7	†12K	3meg	1200Ω	75Ω	80Ω	†47K	● 125K	1200Ω	0Ω
V8	25DN6	NC	80Ω	0Ω	NC	435K	NC	115Ω	†1200Ω	TOP CAP †17Ω
V9	19AU4GTA	NC	NC	¶	NC	†25Ω	NC	160Ω	127Ω	
V10	1X2B	PINS 1 THRU 9 HAVE INFINITE RESISTANCE								TOP CAP †445Ω
V11	17CFP4	10Ω	20Ω	Pin 6 †27K	Pin 10 †25Ω	Pin 11 ● 120K	Pin 12 15Ω			
V201	2BN4A	0Ω	3.7meg	0Ω	.5Ω	†690Ω	0Ω	3.7meg		
V202	5CG8	10K	†5900Ω	0Ω	1.5Ω	.5Ω	†1300Ω	†10K	0Ω	320K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1.
† MEASURED FROM PIN 3 OF V9.

NC NO CONNECTION
TP TIE POINT

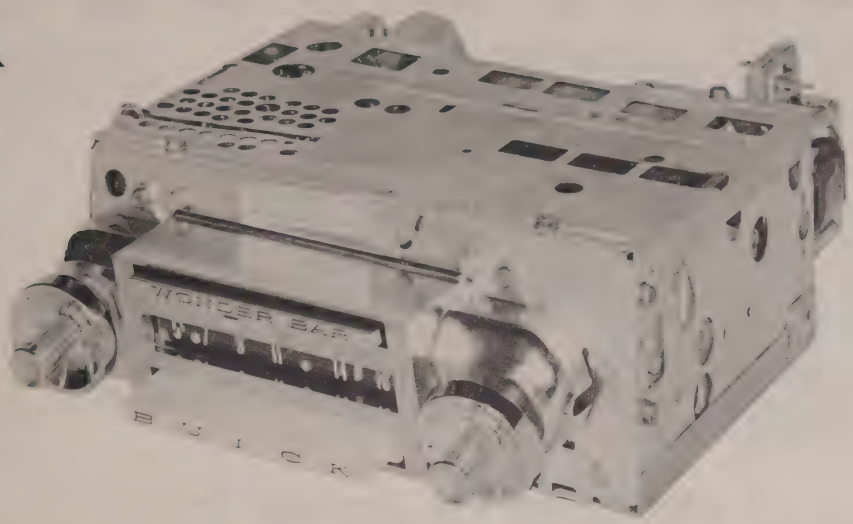


TUBE PLACEMENT CHART

PHOTOFACT® Folder with CIRCUITRACE®

BUICK MODEL 980052

BUICK MODEL 980052



TRADE NAME	Buick Model 980052 (For 1960 Buick Automobiles)
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated 5 Tube, 1 Transistor Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery
TUNING RANGE—BROADCAST	535 — 1615KC RATING 2.6 Amp. @12.6 Volts DC (13A When Tuning)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4....GENERAL CEMENT #9440
A5, A9, A10..GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A6, A7, A8...GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	262KC (400% Mod.)	High Freq. End Stop.	DC probe to point (A). Common to chassis.	A1, A2, A3	Adjust for maximum deflection.
2.	"	"	"	"	A4	Adjust for MINIMUM deflection.
	Check setting of Oscillator core (A5). Rear of core should be 1 5/8" from mounting end of coil form.					
3.	High side thru 82mmf to antenna receptacle. Low side to chassis.	1615KC	"	"	A6, A7, A8	Adjust for maximum deflection.
4.	"	600KC	600KC Signal.	"	A9, A10	"
5.	"	1615KC	1615KC Signal.	"	A7, A8	"
6.	"	1100KC	1100KC Signal.	"		Adjust pointer adjustment until pointer coincides with 1100 on dial.
7.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.					

PUSHBUTTON ADJUSTMENT

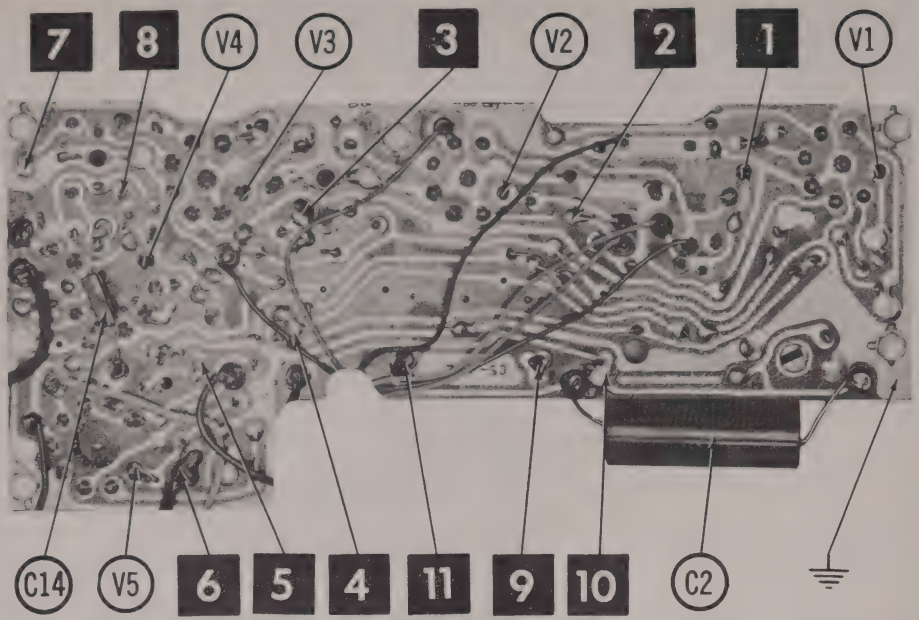
1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press pushbutton in firmly.
4. Repeat for remaining pushbuttons.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KD105

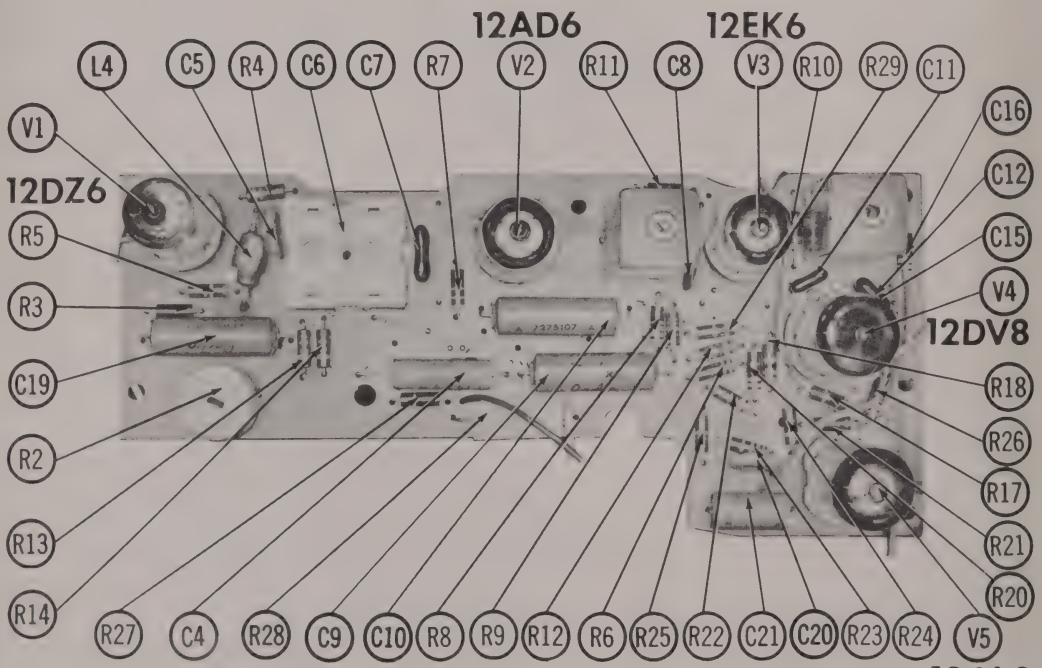
SET 501 FOLDER 3



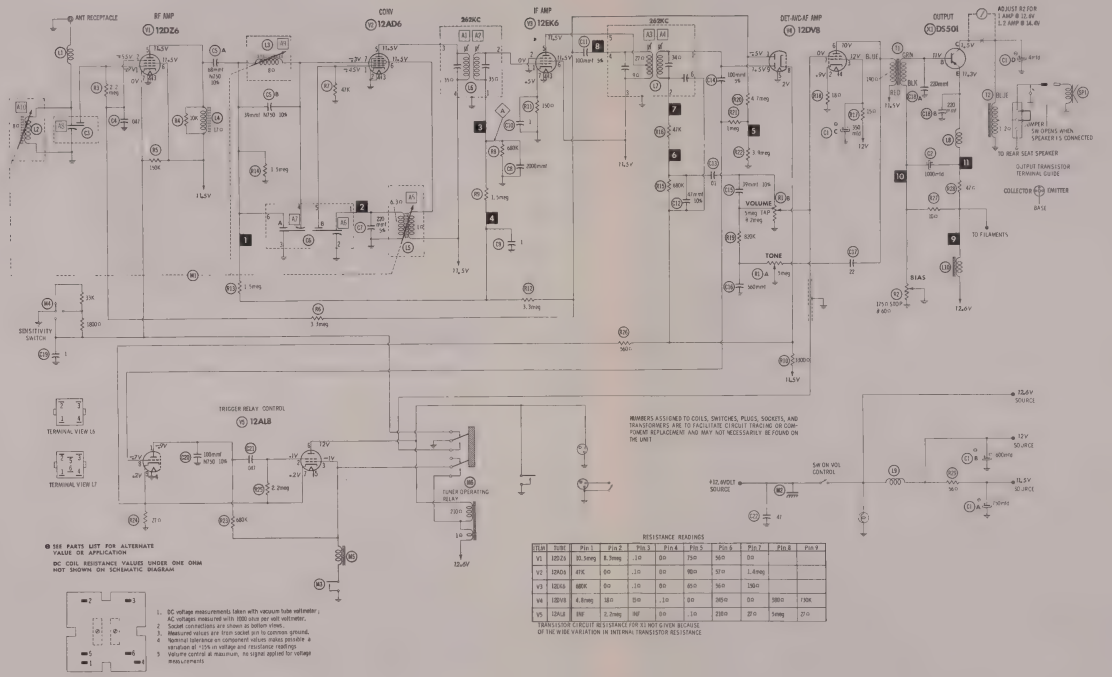
A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PRINTED BOARD



❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Nominal tolerance on component values makes possible a variation of ±20% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

TUBE	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	10.5meg	8.1meg	.10	0.0	750	560	0.0		
V2	12AD6	47K	0.0	.10	0.0	980	57.0	1.4meg		
V3	12EK6	680K	0.0	.10	0.0	650	56.0	150Ω		
V4	12DV8	4.8meg	18.0	15.0	.10	0.0	345.0	0.0	580.0	130K
V5	12AL8	INF	2.2meg	INF	0.0	.10	218.0	27.0	5meg	27.0

TRANSISTOR CIRCUIT RESISTANCE FOR X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE

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BUICK MODEL
980052

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12DZ6	V4	Det. -AVC-AF Amp.	12DV8
V2	Converter	12AD6	V5	Trigger Relay Control	12AL8
V3	IF Amplifier	12EK6			

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	DS-501	Output	2N235A			2N677 *	PNP

* New mounting holes required.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲750	16	7273728①	AFH4-20-75	D0187	WP-101.5		TVLS-4204 *	
B	■600	16							
C	▲350	16							
D	4	11.5							
C2	1000	1	7271557	PRS1130	BR1000-6	TC-110	TD-1000-6	TVA-1104	

① Some versions may use Part #7273847 in this application.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3		#7276220						
C4	.047 75V		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	2TM-S47
C5A	68 N750 10%		N750-DI 68	DTN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
B	39 N750 10%			TCN-39	C10Q39U	CCTN-390	CN7-439	10TCU-Q39
C6A		#7273693						
B								
C7	220 5%		1469-00022	TCZ-220	22R5T22	CM-19B-221J	CNO-322	MS-322
C8	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C9	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C10	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C11	100 5%		1469-0001	TCZ-100	22R5T1	CM-19B-101J	MCE235	MS-310
C12	47 10%		1469-000047	TCZ-47	22R5Q47	CM-19B-470K	CNO-447	MS-447

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C13	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C14	100 5%		1469-0001	TCZ-100	22R5T1	CM-19B-101J	MCE235	MS-310
C15	39 10%		1469-000039	TCZ-39	22R5Q39	CM-19B-390K	CNO-439	MS-439
C16	560		DI-560	DD-561	L10T56	CCD-561	B-356	10TS-T56
C17	.22 100V		P288N-22		CUB2P22	1DP-3-224	GEM-2022	2TM-P22
C18A	220	#6375	DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
B	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C19	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C20	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C21	.047 100V		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	2TM-S47
C22	.47 100V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47

Delco Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	5meg		7275219					Tone, Note 1
B	5meg							Volume
	2meg Tap							
C	Switch					† QJ-1347A		Power Off-On
R2	175Ω *	2(WW)	1221422					Bias
	60Ω Stop							

† "Concentrikit" equivalent: K-8 Kit with base elements and shafts: B12-240, P14-019 (Panel)
B18-141X, R1-105 (Rear)
S37 (Bushing)
76-1 (Switch)

Note 1. Split Element: 18K low end, 5meg high end; open at center of rotation.
* Temperature Compensating.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	2.2meg	
R4	10K	
R5	150K	
R6	3.3meg	
R7	47K	
R8	680K	
R9	1.5meg	
R10	3300Ω	
R11	150Ω	

ITEM No.	RATING	REMARKS
R12	3.3meg	
R13	1.5meg	
R14	1.5meg	
R15	680K	
R16	47K	
R17	15Ω	
R18	18Ω	
R19	820K	
R20	4.7meg	

ITEM No.	RATING	REMARKS
R21	1meg	
R22	3.9meg	
R23	680K	
R24	27Ω	
R25	2.2meg	
R26	560Ω	
R27	10Ω	
R28	.47Ω	#7270608
R29	56Ω	

Delco Part Number. Fuse Type.

PARTS LIST AND DESCRIPTIONS

TUBES

♦ GENERAL ELECTRIC ♦ RAYTHEON ♦ SYLVANIA ♦					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel A Output	50EH5	V2	Channel B Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA COLUMBIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	150	11G760	PR4-200	BBRQ44315C	WQ230	CDB-Q-1001	TVA-3448 TVA-1410	
B	20	150							
C	30	150							
D	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5
C3	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5
C4	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA COLUMBIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	1/2	9G640	B-70	A47-1meg-Z	Q13-137	U53	Volume, Channel A
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	1meg	1/2	9G640	B-70	A47-1meg-Z	Q13-137	U53	Volume, Channel B
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	25K	1/2	9G641	B-26			FA253L	Tone, Channel B
B	25K	1/2		SR-26			RU253L	Tone, Channel A
C	Shaft			Not Req.			CS3500	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	4700Ω	
R5	82Ω	
R6	4700Ω	

ITEM No.	RATING	REMARKS
R7	1000Ω 1W	
R8	210Ω 5W	IRC#PW5 210Ω
R9	22Ω 1W	

ITEM No.	RATING	REMARKS
R10	120Ω 5W	IRC#PW5 120Ω

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA COLUMBIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2400Ω	3-4Ω	3G252	A-3025	AU-605	A-3332	24S53	S-12X	
T2	2400Ω	3-4Ω	3G252	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA COLUMBIA PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	5"	PM	3-4Ω	1G156	5A07	
SP2	5"	PM	3-4Ω	1G156	5A07	

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA COLUMBIA PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.060A	SR-4 * or 10G616 ♦	1235AH *	1N1764 ♦	100A *	SR200 ♦	* Selenium ♦ Silicon

PHONO CARTRIDGE

ITEM No.	COLUMBIA PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M2		70TS(TB)		96				12TH5	

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	COLUMBIA PART No.	JENSEN PART No.	REMARKS
M3		CRA-57 † or CRA-57D ♦	† Jewel ♦ Diamond
		CRA-57X † or CRA-57XD ♦	

MISCELLANEOUS

ITEM No.	PART NAME	COLUMBIA PART No.	NOTES
M4	Switch		Off-On (Part of Changer)
M5	Motor		Phono Drive (Part of Changer)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Cabinet	17G875	Tan, Model C-1010T
Cabinet	17G874	Grey, Model C-1010G
Handle	18G696	Grey, Model C-1010G
Handle	18G695	Tan, Model C-1010T

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE®

COLUMBIA MODELS C1158C, M, W, C1166B, M, W

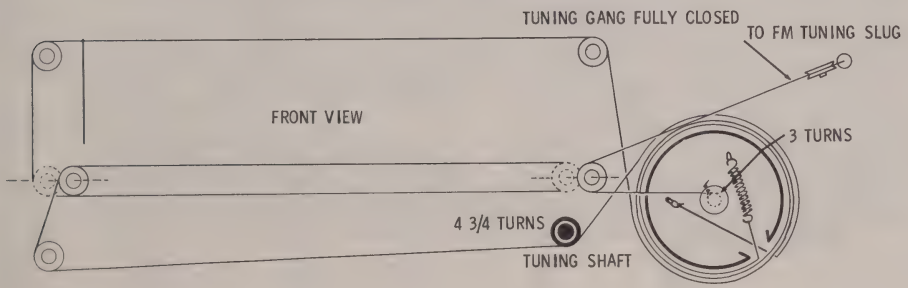
COLUMBIA MODELS C1158C, M, W, C1166B, M, W

MODEL C1158

TRADE NAME	Columbia Models C1158C, C1158M, C1158W, C1166B, C1166M, C1166W
MANUFACTURER	CBS Electronics, 100 Endicott Street, Danvers, Mass.
TYPE SET	AC Operated 6 Tube FM-AM Tuner With Stereo Preamplifier, 4 Tube Stereo Amplifier, and 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 100 Watts, .9 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	535 — 1620KC FREQ. MOD. 88 — 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR COLLARO TC-340-E (CONQUEST REVISED) — PHOTOFACT SET 408 FOLDER 6 OR RECORD CHANGER MANUAL RC-11

DIAL CORD STRINGING



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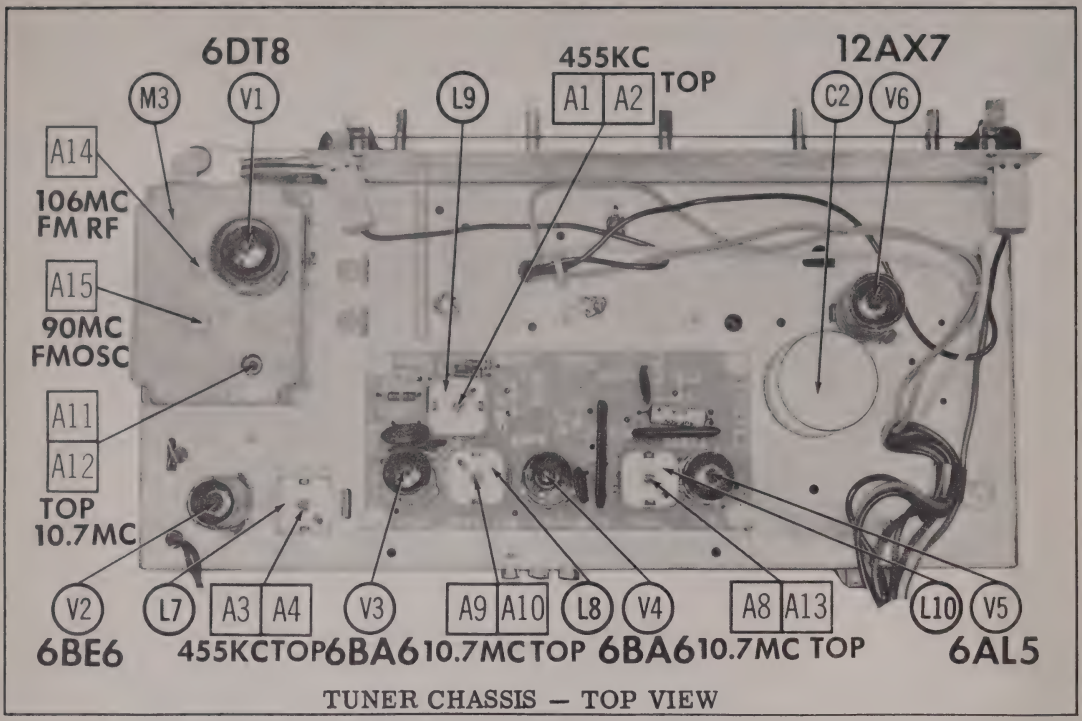
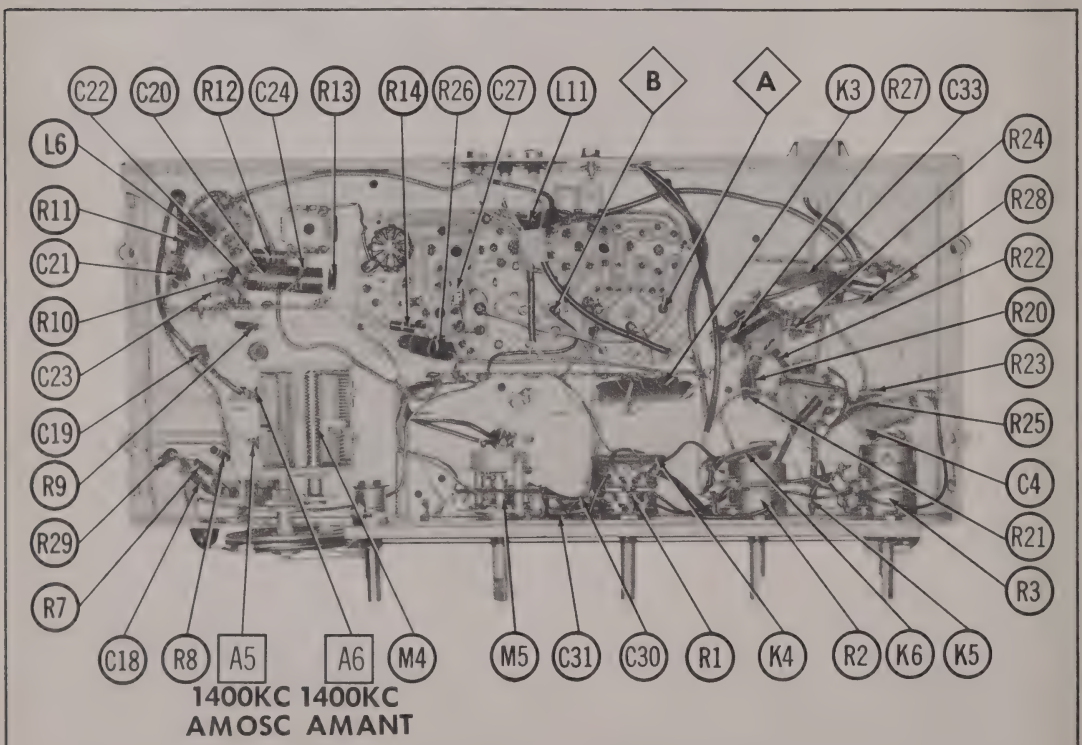
JN996

SET 501 FOLDER 5



TUNER CHASSIS — TOP VIEW



TUNER CHASSIS — BOTTOM VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4, A8, A9, A10, A13...GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A14, A15.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

AM ALIGNMENT—SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	High side thru 10mmf to AM antenna terminal. Low side to chassis.	1400KC	1400KC	"	A5, A6	"
3.	"	600KC	600KC	"	A7	Adjust for maximum output. Repeat Steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	Across FM antenna terminals.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10, A11, A12	Adjust for maximum deflection.
5.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	Across FM antenna terminals.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A8, A9, A10, A11, A12	Disconnect stabilizing capacitor C3. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C3.
5.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A13	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	Across FM antenna terminals with 120Ω in high side and 150Ω in low side.	106MC (Unmod.)	(FM) 106MC	DC probe to point Ⓐ. Common to chassis.	A14	Adjust for maximum deflection.
7.	"	90MC	90MC	"	A15	Adjust for maximum deflection.

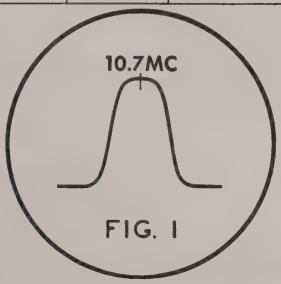


FIG. 1

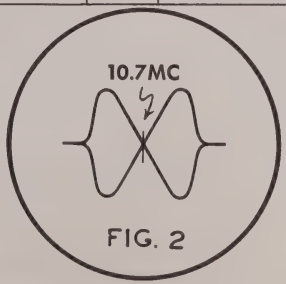
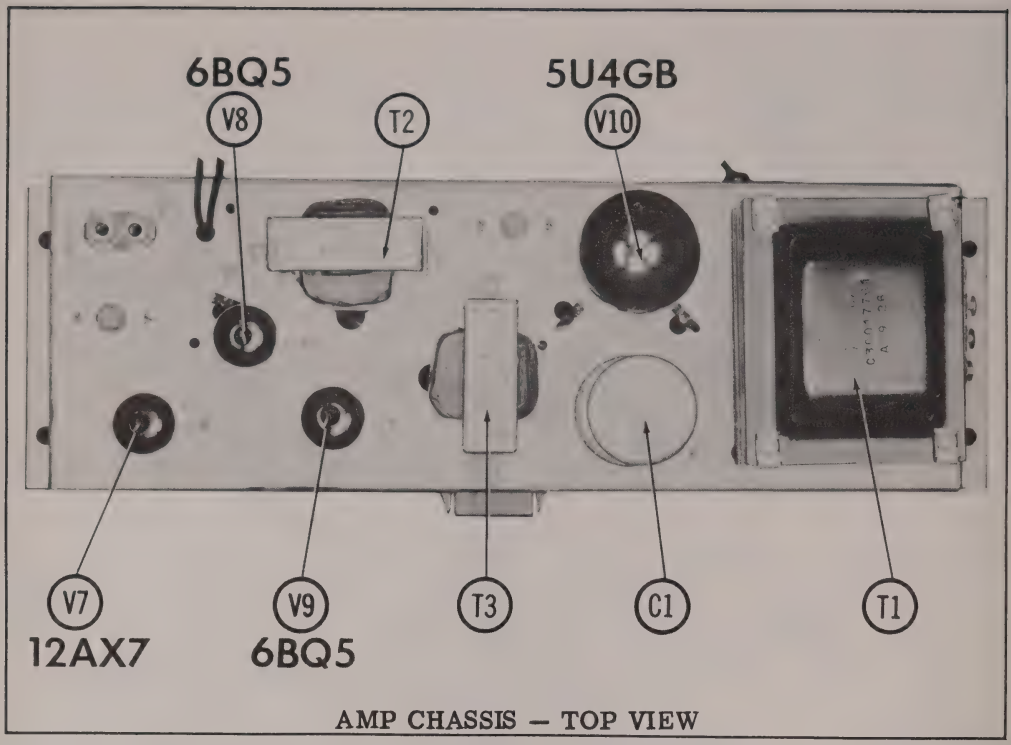
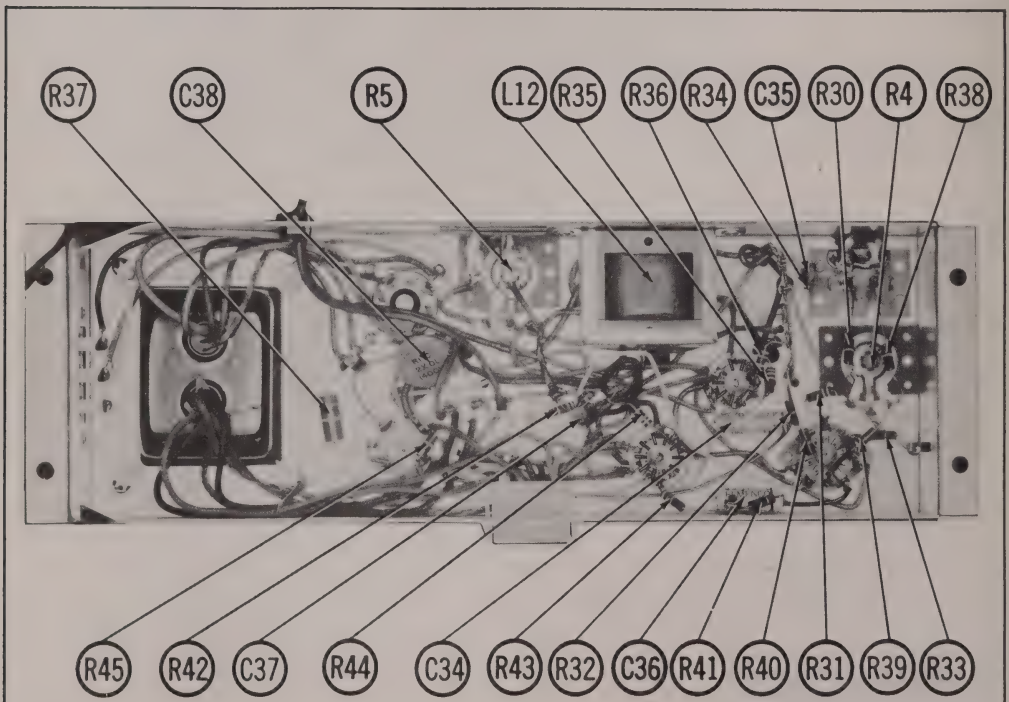


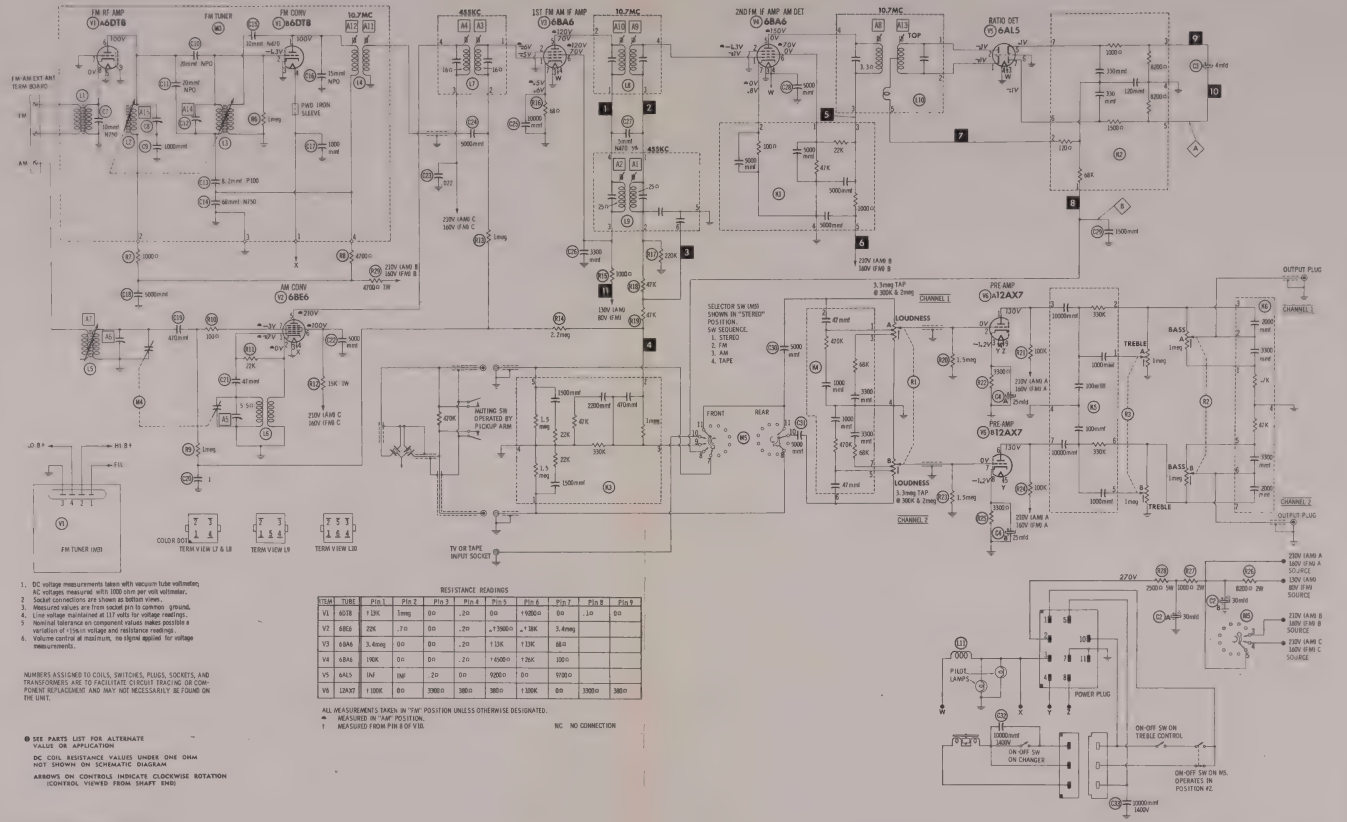
FIG. 2



AMP CHASSIS — TOP VIEW



AMP CHASSIS — BOTTOM VIEW



1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6DT8	†13K	1meg	0Ω	.2Ω	0Ω	†9200Ω	0Ω	.1Ω	0Ω
V2	6BE6	22K	.7Ω	0Ω	.2Ω	▲†560Ω	▲†18K	3.4meg		
V3	6BA6	3.4meg	0Ω	0Ω	.2Ω	†13K	†13K	68Ω		
V4	6BA6	190K	0Ω	0Ω	.2Ω	†4500Ω	†26K	100Ω		
V5	6AL5	INF	INF	2Ω	0Ω	9200Ω	0Ω	9700Ω		
V6	12AX7	†100K	0Ω	3300Ω	380Ω	380Ω	†100K	0Ω	3300Ω	380Ω

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
▲ MEASURED IN "AM" POSITION.
† MEASURED FROM PIN 8 OF V10.
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CircuiTrace
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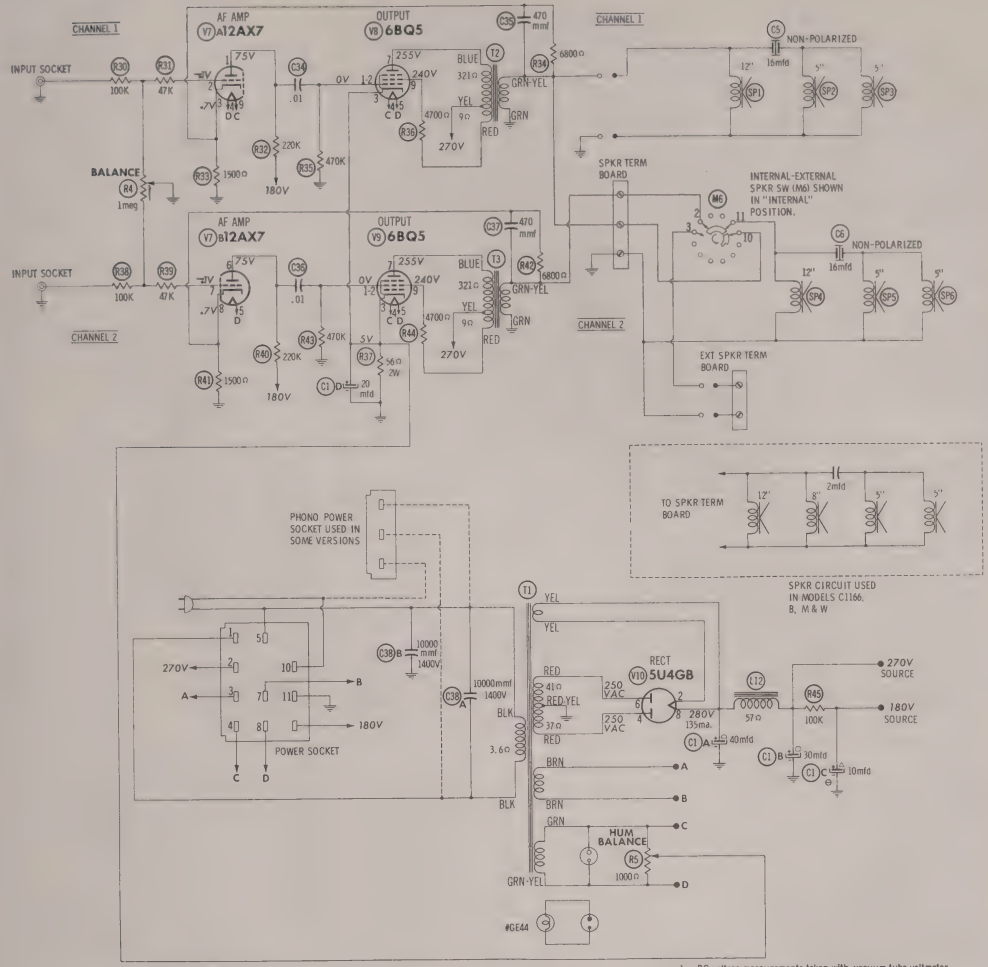
COLUMBIA MODELS C1158C, M, W, C1166B, M, W

TUNER SCHEMATIC



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V7	12AX7	↑320K	250K	1200Ω	380Ω	380Ω	↑320K	250K	1200Ω	380Ω
V8	6BQ5	470K	470K	56Ω	380Ω	380Ω	NC	↑378Ω	NC	↑4700Ω
V9	6BQ5	470K	470K	56Ω	380Ω	380Ω	NC	↑378Ω	NC	↑4700Ω
V10	5U4GB	NC	¶	NC	37Ω	NC	41Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
↑ MEASURED FROM PIN 8 OF V10. NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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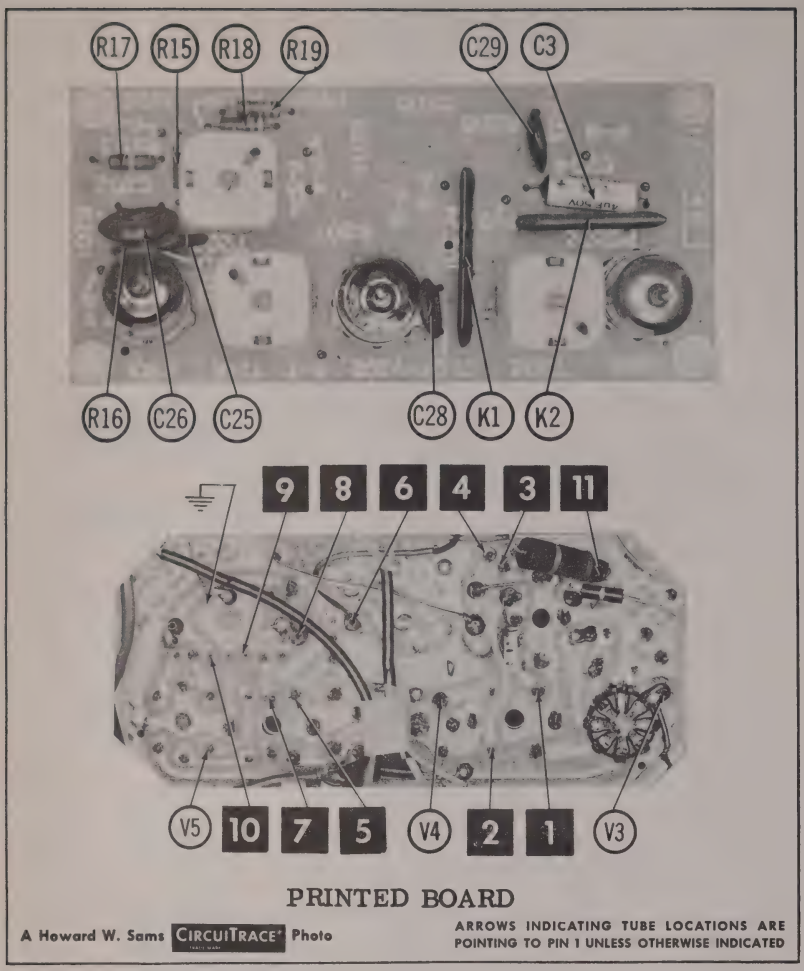
COLUMBIA MODELS C1158C, M, W, C1166B, M, W

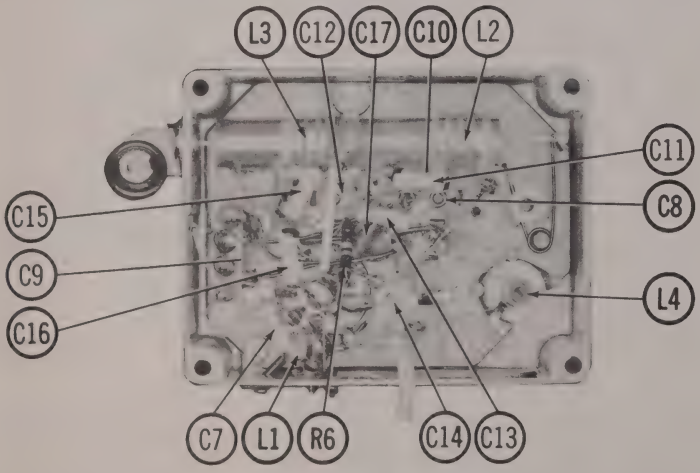
AMP SCHEMATIC



PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



FM RF SUBCHASSIS

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Conv.	6DT8	V7	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7
V2	AM Converter	6BE6	V8	Channel 1 Output	6BQ5
V3	1st FM-AM IF Amplifier	6BA6	V9	Channel 2 Output	6BQ5
V4	2nd FM IF Amp. -AM Det.	6BA6	V10	Rectifier	5U4GB
V5	Ratio Detector	6AL5			
V6	Channel 1 Preamp. - Channel 2 Preamp.	12AX7			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA COLUMBIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450		AFH4-78	D0640	FP429	TMQ-4544	TVL-4734	
B	■30	450							
C	▲10	450	①						
D	20	25							
C2A	▲30	450	11F752	AFH2-54	B0430	FP237	TMD-2640	TVL-2759	
B	▲30	450							
C3	4	50		PWE50005	EC5-50	TT50X4	ML4-50	TE-1302.1	
C4A	25	25		PRS2175	BBRD3315	TCD26	TDLD-4	TVA-2434	
B	25	25							
C5	16	25NP		PRS7350	BBRI6-150	TCN2516		TVANS-1204.3*	
C6	16	25NP		PRS7350	BBRI6-150	TCN2516		TVANS-1204.3*	

① In some versions C1C may be 20mfd (C1 Part #11F753).
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	10 N750		N750-SI 10	TCN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C8								
C9	1000		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C10	20 NPO		NPO-SI 20	TCZ-20	C10Q2C	CCTO-200	CNO-522	10TCC-Q20
C11	20 NPO		NPO-SI 20	TCZ-20	C10Q2C	CCTO-200	CNO-522	10TCC-Q20
C12								
C13	8.2 P100							
C14	68 N750		N750-SI 68	TCN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C15	10 N470					*		
C16	15 NPO		NPO-SI 15	TCZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C17	1000		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C18	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C19	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C20	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C21	47		DI 47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C22	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C23	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C24	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C27	5 N470 5%					*		
C28	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C29	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C30	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C31	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C32	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	2HY-110	BL-S10
C33	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	2HY-110	BL-S10
C34	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C35	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C36	.01 400V		P488N-01	D6-103	CUB4S1	4DP-3-103	GEM-411	4TM-S1
C37	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C38A	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-110	BL-S10
B	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103		BL-S10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA COLUMBIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3.3meg*		9F630	BT-180			FA36DT155	Loudness, Channel 1
B	3.3meg*			SR-180			RU36DT155	Loudness, Channel 2
C	Shaft			Not Req.			CS3500	
R2A	1meg		9F632	B-70	AD47-1meg-Z		FA16A	Bass, Channel 1
B	1meg			SR-70	Not Req.		RU16A	Bass, Channel 2
C	Shaft			Not Req.	FS-3		CS3500	
R3A	1meg		9F631	B-70	AD47-1meg-Z		FA16A	Treble, Channel 1
B	1meg			SR-70	Not Req.		RU16A	Treble, Channel 2
C	Shaft			Not Req.	FS-3		CS3500	
D	Switch			KR-1	SWE-12		US41	Power Off-On
R4A	1meg		9F633	AB-69	B47-1meg-S	B11-137	SU-54	Balance
B	Shaft			AK-1	Not Req.	TM4	Not Req.	
R5A	1000Ω		9F634	AB-5	A47-1000-S	B11-108	TA13L	Hum Balance
B	Shaft			AK-1	FKS-1/4	TM4	Not Req.	

* Taps @ 300K & 2meg.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R6	1meg	
R7	1000Ω	
R8	4700Ω	
R9	1meg	
R10	100Ω	
R11	22K	
R12	15K 1W	
R13	1meg	
R14	2.2meg	
R15	1000Ω	
R16	68Ω	
R17	220K	
R18	47K	
R19	47K	

ITEM No.	RATING	REMARKS
R20	1.5meg	
R21	100K	
R22	3300Ω	
R23	1.5meg	
R24	100K	
R25	3300Ω	
R26	8200Ω 2W	
R27	1000Ω 2W	
R28	2500Ω 5W	IRC#PW5 2500Ω
R29	4700Ω 1W	
R30	100K	
R31	47K	
R32	220K	
R33	1500Ω	

ITEM No.	RATING	REMARKS
R34	6800Ω	
R35	470K	
R36	4700Ω	
R37	56Ω 2W	
R38	100K	
R39	47K	
R40	220K	
R41	1500Ω	
R42	6800Ω	
R43	470K	
R44	4700Ω	
R45	100K	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		COLUMBIA PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Trans.	20F356				
L2	FM RF Coil	20F358				
L3	FM Osc. Coil					
L4	1st FM IF Trans.	20F355				
L5	Loopstick	20F357	BC-419	705-A		
L6	AM Osc. Coil	20F346	BC-394	70-OSC		
L7	1st AM IF Trans.	20F347	BC-353	12-C1	RF-1	
L8	2nd FM IF Trans.	20F348	FM-256	1463-PC		
L9	2nd AM IF Trans.	20F349	BC-329	13-PC6	RF-4 *	
L10	Ratio Det.	20F350	FM-257	1465-PC		
L11	Fil. Choke	21F212	BC-562	4604		1.8uh

* Connect two, 100mmf Caps externally.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	COLUMBIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L12	.135A	57Ω	1HY	21F211			C-2343			

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	COLUMBIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V@ .9A	500 VCT @.135A	5V@ 3A	2F117						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V@ 1.8A	6.3V@ 2.1A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	COLUMBIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5800Ω Tap@ 2.8%	3-4Ω	3F248				24S51A		
T3	5800Ω Tap@ 2.8%	3-4Ω	3F248				24S51A		

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	COLUMBIA PART No.	QUAM PART No.	
SP1	12"	PM	3-4Ω	1F149	12A31	
SP2	5"	PM	3-4Ω	1F147	5A15TZ3.8	
SP3	5"	PM	3-4Ω	1F147	5A15TZ3.8	
SP4	12"	PM	3-4Ω	1F149	12A31	
SP5	5"	PM	3-4Ω	1F147	5A15TZ3.8	
SP6	5"	PM	3-4Ω	1F147	5A15TZ3.8	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	COLUMBIA PART No.	REPLACEMENT DATA
K1	Limiter Network	(4) 5000mmf, 100Ω, 1000Ω, 22K, 47K		
K2	Ratio Det. Network	120mmf, (2) 330mmf, 120Ω, 1000Ω, 1500Ω, (2) 8200Ω, 68K		
K3	Phono Input Comp.	470mmf, (2) 1500mmf, 2200mmf, (2) 22K, 47K, 330K, 1meg, (2) 1.5meg		
K4	Loudness Comp.	(2) 47mmf, (2) 1000mmf, (2) 3300mmf, (2) 68K, (2) 470K		
K5	Treble Comp.	(2) 100mmf, (2) 1000mmf, (2) 10000mmf, (2) 330K		
K6	Bass Comp.	(2) 2000mmf, (2) 3300mmf, (2)47K		

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA								
	COLUMBIA PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M1		13TB		26S	S1-1 S3-3			8TA4-S	N-8TA-S

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA		REMARKS
	COLUMBIA PART No.	JENSEN PART No.	
M2		CS-1X † or CS-1XD ♦	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	COLUMBIA PART No.	NOTES
M3	Tuner		FM, Complete
M4	Tuning Cap.	14F111	AM, 2 Gang (Ant. 4-346mmf, Osc. 5-75mmf)
M5	Switch	19F695	Band Selector (Rotary Wafer)
M6	Switch	19F692	Speaker (Rotary Wafer)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

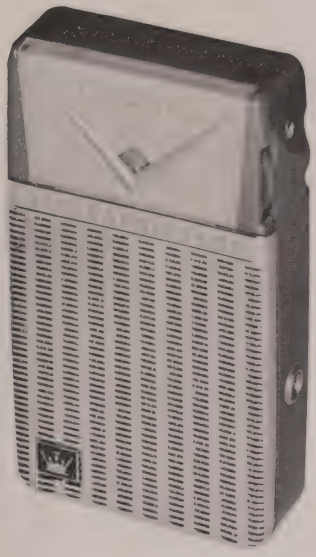
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

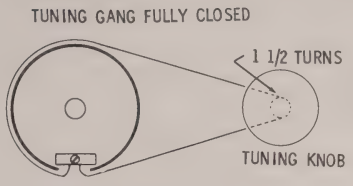
PHOTOFACT® Folder with CIRCUITRACE®

CROWN MODEL TR-670

CROWN MODEL TR-670



DRIVE CORD STRINGING



FRONT VIEW

CROWN MODEL TR-670

TRADE NAME	Crown Model TR-670
IMPORTER	Shriro, Inc., 276 Fourth Ave., New York 10, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC
RATING	6 MA@9 Volts DC (No Signal, Min. Volume)
	9 MA@9 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	535 – 1640KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A4. GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537
A4, A6.... GENERAL CEMENT #5000, 5003, 5066, 8271, 8272, 8276, 8277, 8290, 8609, 8722, 9150, 9298
WALSCO #2515, 2516, 2518, 2519, 2525, 2541

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	Tune to 600KC Signal.	"	A5	Adjust for maximum output while rocking tuning gang.
4.	"	1400KC	Tune to 1400KC Signal.	"	A6	Adjust for maximum output.

SET 501 FOLDER 6

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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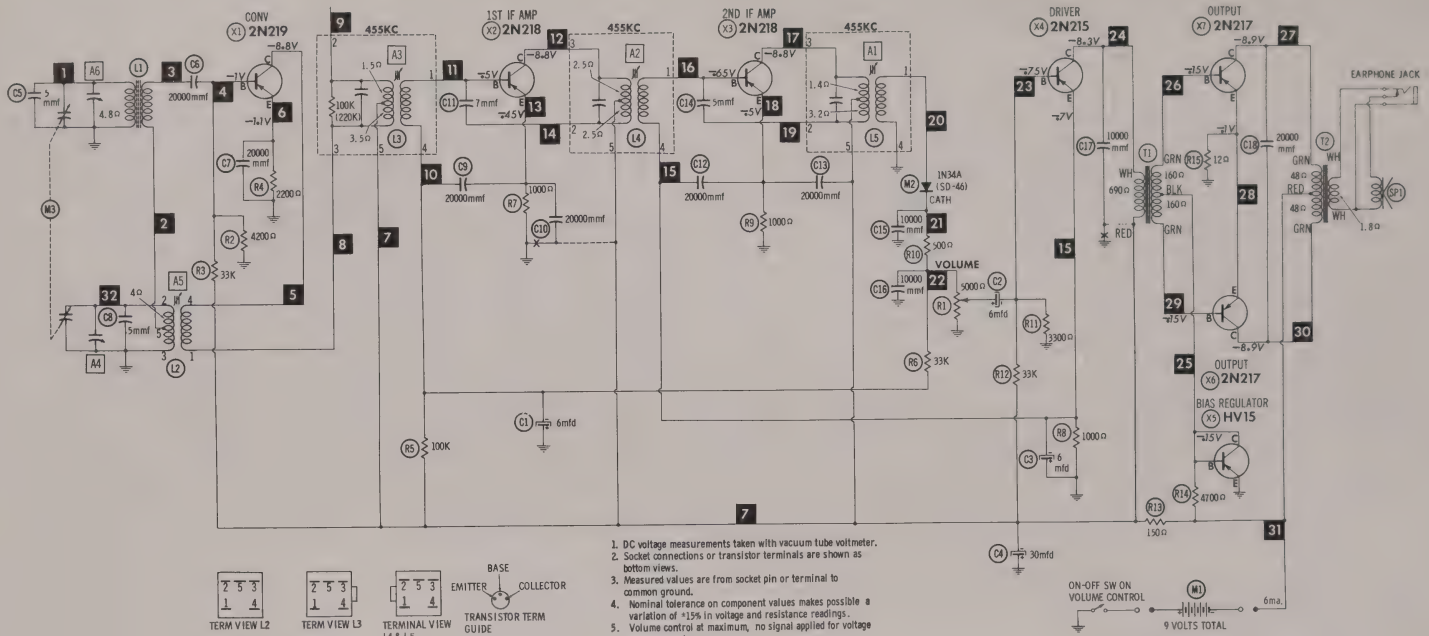

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

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CROWN MODEL TR-670

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N219	Converter		2N219	2N486	2N219	PNP
X2	2N218	1st IF Amplifier		2N218	2N483	2N218	PNP
X3	2N218	2nd IF Amplifier		2N218	2N483	2N218	PNP
X4	2N215	Driver		2N406	2N362	2N104	PNP
X5	HV15	Bias Regulator			CK879		
X6	2N217	Output		2N217	2N632	2N217	PNP \ Matched
X7	2N217	Output		2N217	2N632	2N217	PNP / Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	CROWN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	6	6			NLW6-15	TT6X5			
C2	6	6			NLW6-15	TT6X5			
C3	6	6			NLW6-15	TT6X5			
C4	30	10		XPP-10030	NLW25-10	TT15X30	ML30-15	TE-1158	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C6	20000		C80V203AM	DDM-203	H-0585		TA-120	TG-S20
C7	20000		C80V203AM	DDM-203	H-0582		TA-120	TG-S20
C8	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C9	20000		C80V203AM	DDM-203	H-0582		TA-120	TG-S20
C10	20000		C80V203AM	DDM-203	H-0585		TA-120	TG-S20
C11	7		NPO-DI 6.8	DTZ-6R8	C10V7C	CCTO-6R8	CNO-568	10TCC-V68
C12	20000		C80V203AM	DDM-203	H-0582		TA-120	TG-S20
C13	20000		C80V203AM	DDM-203	H-0582		TA-120	TG-S20
C14	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C15	10000		C80V103AM	DDM-103	H-0581		TA-110	TG-S10
C16	10000		C80V103AM	DDM-103	H-0581		TA-110	TG-S10
C17	10000		C80V103AM	DDM-103	H-0581		TA-110	TG-S10
C18	20000		C80V203AM	DDM-203	H-0582		TA-120	TG-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CROWN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	5000Ω	1/4	TV-200A	B16-216				Volume
B	Switch			Not Req.				Power Off-On

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	4200Ω	
R3	33K	
R4	2200Ω	
R5	100K	
R6	33K	

ITEM No.	RATING	REMARKS
R7	1000Ω	
R8	1000Ω	
R9	1000Ω	
R10	500Ω	
R11	3300Ω	

ITEM No.	RATING	REMARKS
R12	33K	
R13	150Ω	
R14	4700Ω	
R15	12Ω	

PRINTED BOARD

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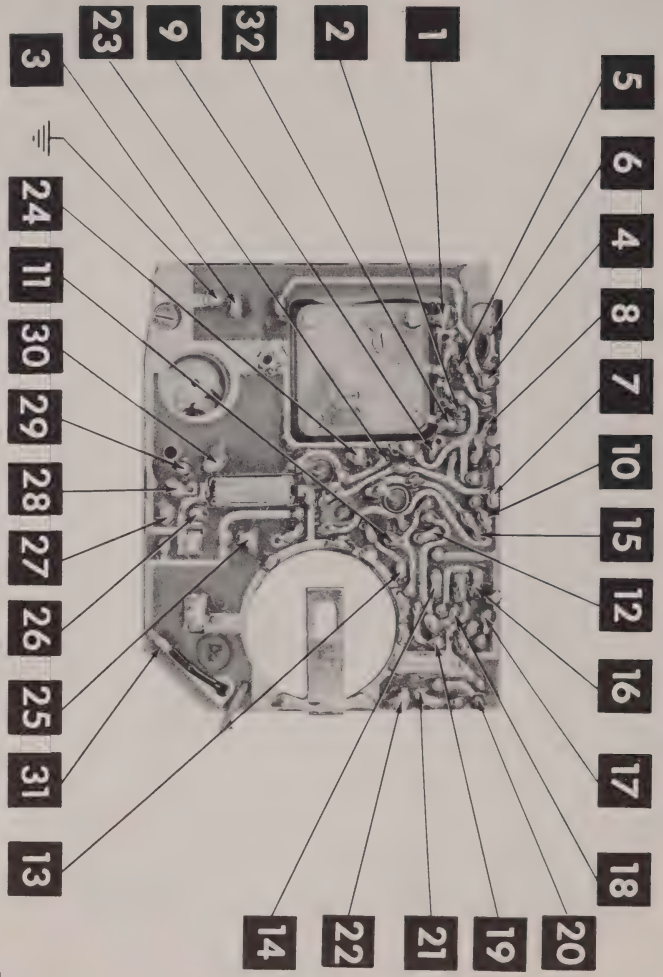


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		CROWN PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	670A				
L2	Osc. Coil	X0-81				
L3	1st IF Trans.	8508				
L4	2nd IF Trans.	8503				
L5	3rd IF Trans.	8549				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	CROWN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	TRT-22			TR-38		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CROWN PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	400Ω CT	6-8Ω	TRT-23						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CROWN PART No.	QUAM PART No.	
SP1	2 1/4"	PM	6-8Ω	PL-230		

BATTERIES

ITEM No.	VOLTAGE	CROWN PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			2U6		216		M-1604	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		CROWN PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N34A *		1N34A	1N34A	1N34A	Detector (Pigtail)

* Alternate Type SD-46.

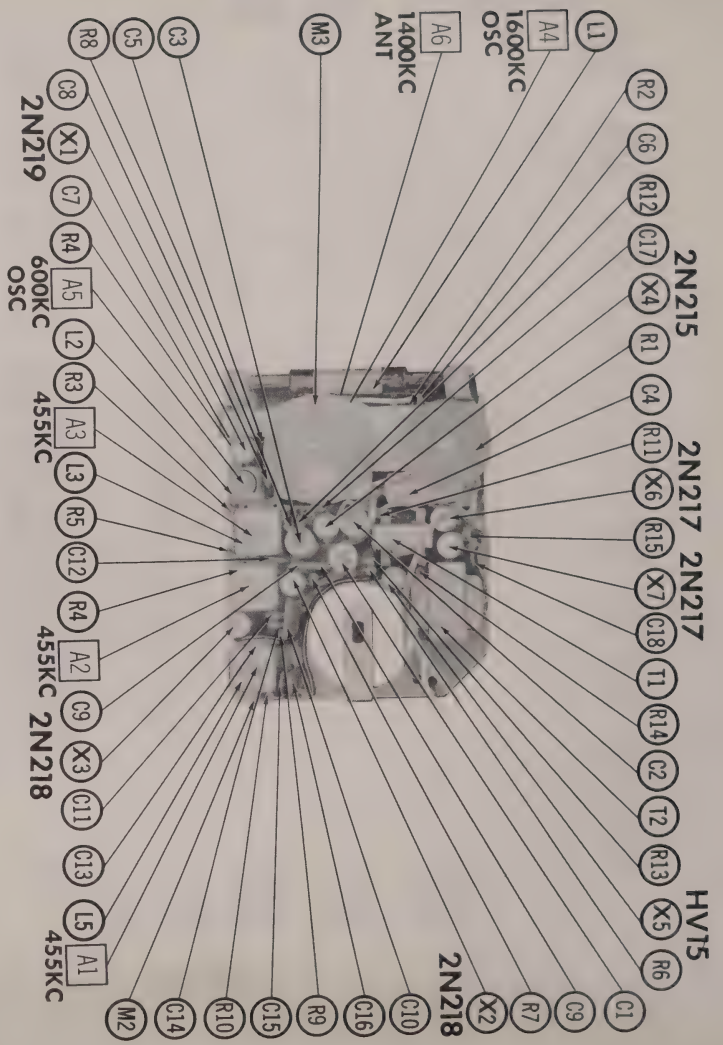
MISCELLANEOUS

ITEM No.	PART NAME	CROWN PART No.	NOTES
M3	Tuning Cap.		2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder

HOFFMAN MODELS 8008, 8009, 8010 (Ch. 1136, 1138, 1140, 1141)

HOFFMAN MODELS 8008, 8009, 8010 (Ch. 1136, 1138, 1140, 1141)

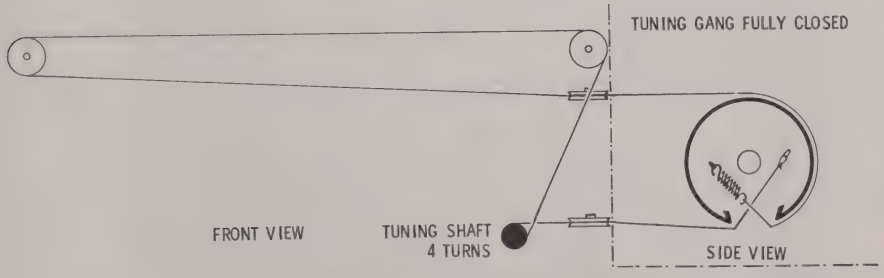
MODEL 8010

TRADE NAME	Hoffman Models B8008, M8008, SP8008, W8008 (Tuner Ch. 1141, Amp. Ch. 1140) B8009, M8009, SP8009, W8009 (Tuner Ch. 1138, Amp. Ch. 1140) B8010, M8010, SP8010, W8010 (Tuner Ch. 1138, Amp. Ch. 1136)	
MANUFACTURER	Hoffman Electronics Corp., Consumer Products Div., 6200 S. Avalon Blvd., Los Angeles 3, Calif.	
TYPE SET	AC Operated FM-AM Receiver With Stereo Amplifier and 4 Speed Automoatic Record Changer	
TUBES	Tuner Chassis 1138: 10 Tuner Chassis 1141: 9	Amplifier Chassis 1136: 7 Amplifier Chassis 1140: 4
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING 170 Watts, 1.5 Amp. @117 Volts AC (Ch. 1138 & 1136) 120 Watts, 1 Amp. @117 Volts AC (Ch. 1138 & 1140)
TUNING RANGES—BROADCAST	535 - 1620KC	FREQ. MOD. 88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER PART #990010 USED IN MODELS 8009 SERIES AND CHANGER PART #990012 USED IN MODELS 8010 SERIES — SEE GLASER-STEERS GS-77 — PHOTOFACT SET 399 FOLDER 7

FOR SERVICE INFORMATION ON RECORD CHANGER PART #990011 USED IN MODELS 8008 SERIES — SEE V-M 1201 — PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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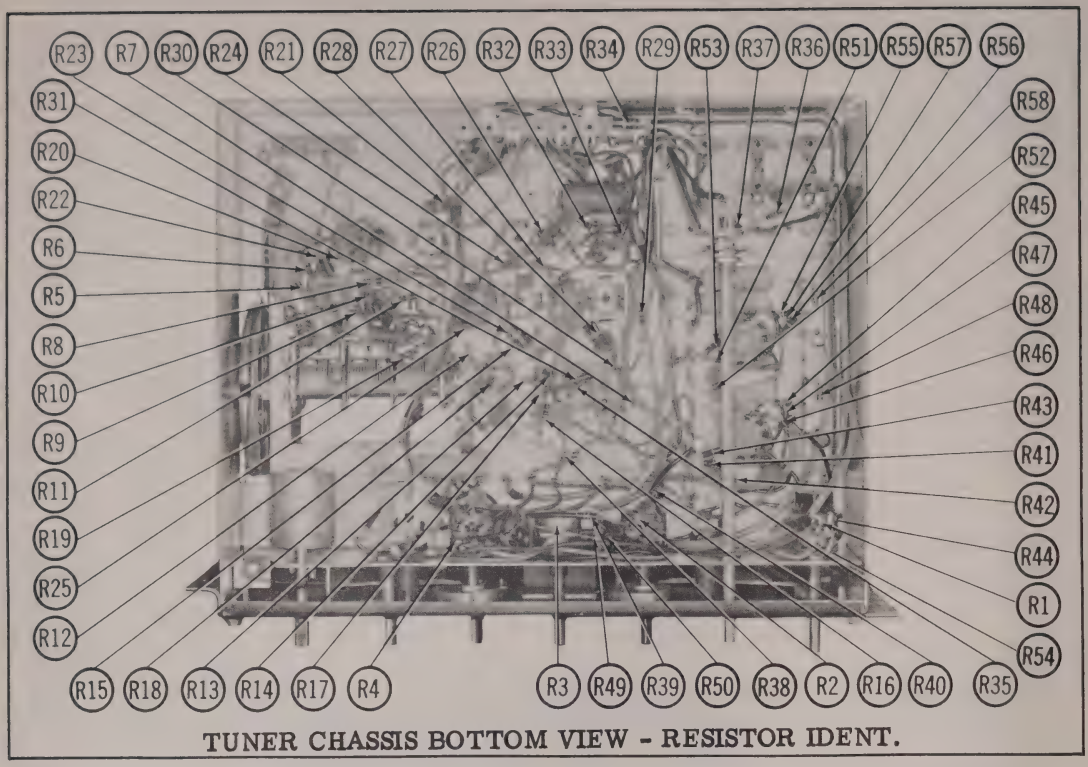
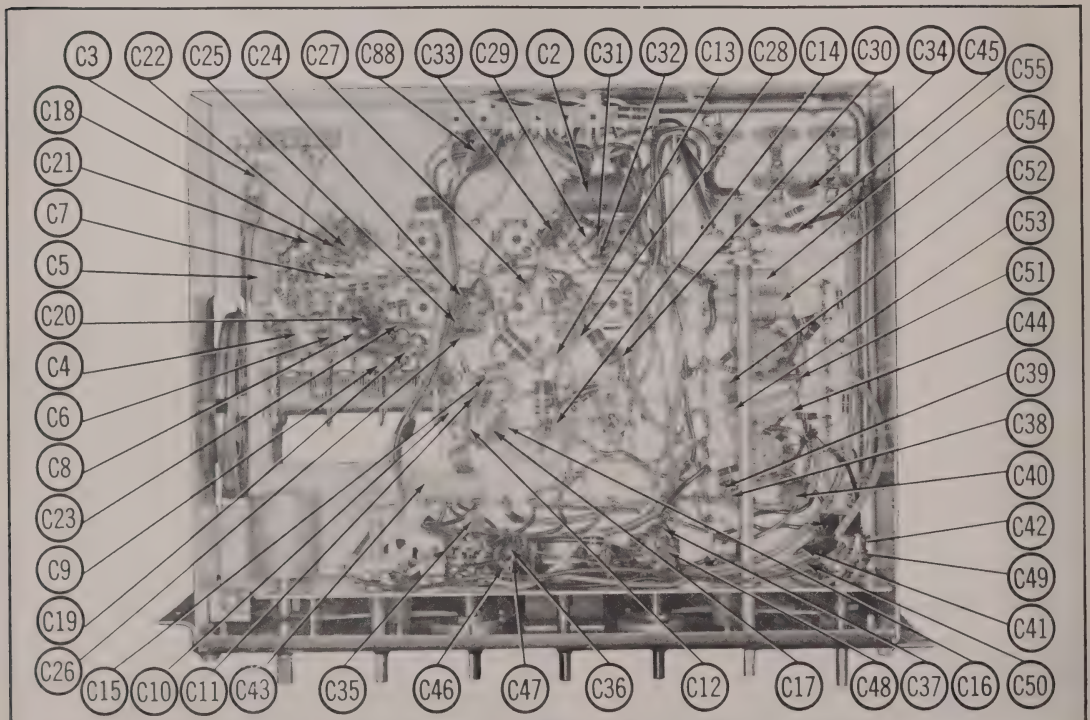
SET 501 FOLDER 7



TUNER CHASSIS BOTTOM VIEW - RESISTOR IDENT.



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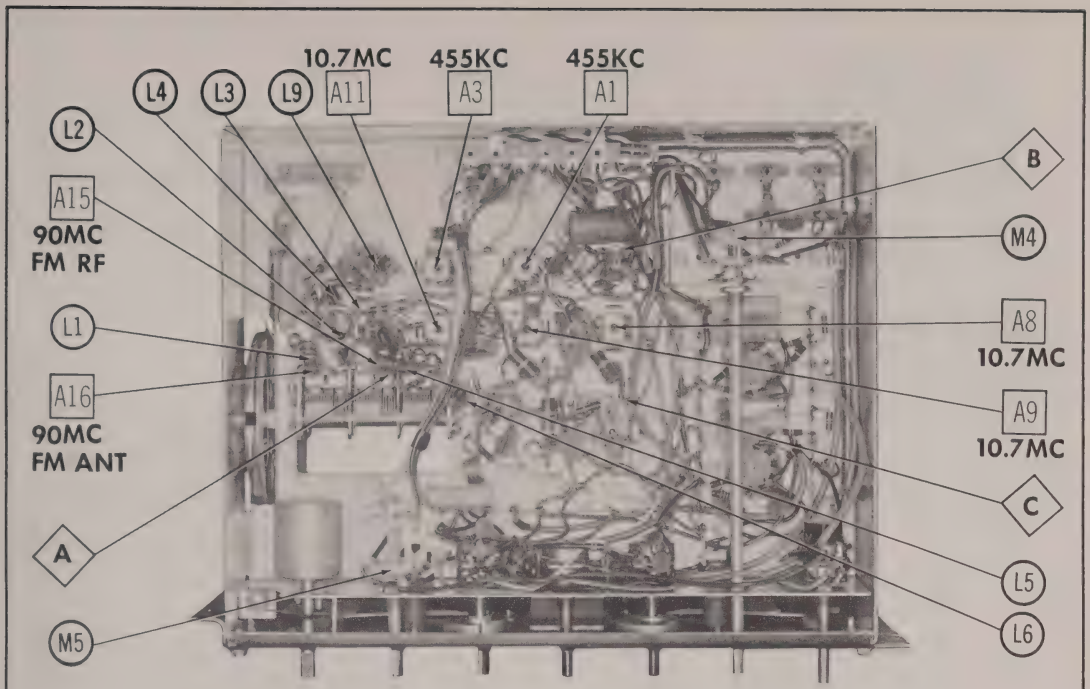
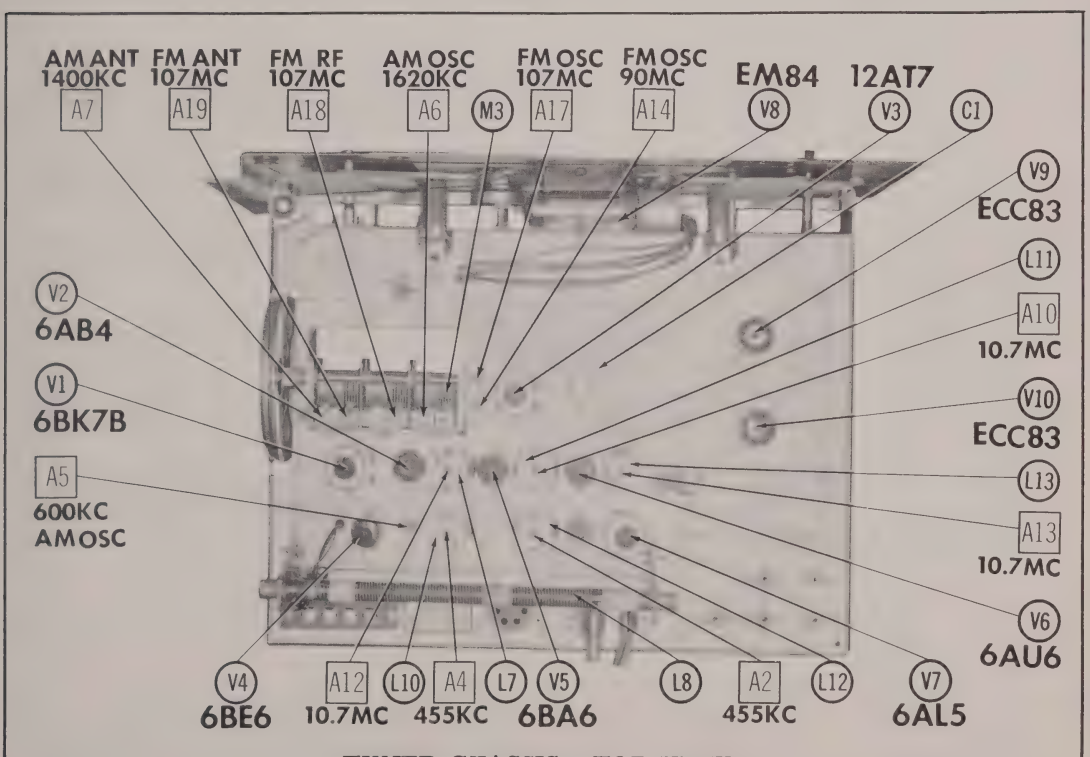


TUNER CHASSIS BOTTOM VIEW - ALIGNMENT, INDUCTOR & MISC. IDENT.



TUNER CHASSIS - TOP VIEW

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (CBS / GENERAL ELECTRIC / RAYTHEON / SYLVANIA)
V1	FM RF Amplifier	6BK7B
V2	FM Mixer	6AB4
V3	FM Osc.-AFC	12AT7
V4	AM Converter	6BE6
V5	FM-AM IF Amp.	6BA6
V6	AM Det.-FM IF Amp.	6AU6
V7	FM Ratio Det.	6AL5
V8	Tuning Indicator	EM84/6FG6 Note 1
V9	Left Channel AF Amp.-Cathode Follower	ECC83/12AX7 (7025) *
V10	Right Channel AF Amp.-Cathode Follower	ECC83/12AX7 (7025) *

Note 1. Not used in Tuner Chassis 1141.
* Alternate.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	350	857106	AFH4-53	D0460	FP430.6	TMQ-58	TVL-4622.3	
B	■40	350							
C	▲50	25							
D	50	25							
C2	8	150	856014	PRS1405	BBR8-150	TC41	TD-8-150	TVA-1405	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	12 N750 5%			TCN-12	C10Q12U		CN7-412	10TCU-Q12
C4	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C5	.1 200V	(.01) †	P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C6	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C7	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C8	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C9	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C10	1-8	#872006	829-10					
C11	33 N750		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	12 N750 5%			TCN-12	C10Q12U		GN7-412	10TCU-Q12
C16	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C19	12 N750 5%			TCN-12	C10Q12U		CN7-412	10TCU-Q12
C20	300 5%	(390) †	1469-0003	TCZ-300	22R5T3	CM-19B-301J	MCE241	MS-43
C21	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C22	47000		BPD-05	DD-503	CUB6S5	6DP-3-473	GP150	5HK-S50
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	10000	(.1) †	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C28	10000		BPD-0001	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C30	680		BPD-00068	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C31	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C32	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C33	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C36	680		BPD-00068	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C37	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C38	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C39	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C40	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C41	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C42	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C43	.047 200V	#870301 Ⓘ						
C44	.047 200V	#870301 Ⓘ						
C45	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C46	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C47	680		BPD-00068	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C48	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C49	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C50	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C51	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C52	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C53	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C54	.047 200V	#870301 Ⓘ						
C55	.047 200V	#870301 Ⓘ						

Hoffman Part Number.
† Alternate Value.
Ⓘ Shielded Unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA HOFFMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg		802045					Loudness, Right Channel
	500K Tap							
B	1meg							Loudness, Left Channel
	500K Tap							
C	Switch							Push-Pull, Off-On
R2A	1meg		802049	B-70	AD47-1meg-Z		FA16A	Bass, Right Channel
B	1meg			SR-70	Not Req.		RU16A	Bass, Left Channel
C	Shaft			Not Req.	FS-3		CS3500	
R3A	500K		802050	B-60				Balance, Right Channel
B	500K			SR-613				Balance, Left Channel
R4A	1meg		802049	B-70	AD47-1meg-Z		FA16A	Treble, Right Channel
B	1meg			SR-70	Not Req.		RU16A	Treble, Left Channel
C	Shaft			Not Req.	FS-3		CS3500	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	470K	
R6	56Ω	
R7	1000Ω	
R8	220K	
R9	470K	
R10	2.2meg	
R11	22Ω	
R12	33K	
R13	2.2Ω	
R14	220K	
R15	10K	
R16	470Ω	
R17	47K 2W	
R18	22K	
R19	47Ω	
R20	22K	
R21	8200Ω 2W	
R22	470K	

ITEM No.	RATING	REMARKS
R23	8200Ω 2W	
R24	2.2meg	
R25	68Ω	
R26	100K	
R27	82K	
R28	8200Ω 2W	
R29	390Ω	
R30	100K	
R31	2.2meg	
R32	6800Ω	
R33	6800Ω	
R34	180Ω 1W	
R35	22K	
R36	330K	
R37	150K	
R38	470K	Note 1
R39	220K	
R40	470K	

ITEM No.	RATING	REMARKS
R41	680K	
R42	150K	
R43	2200Ω	
R44	33K	
R45	220K	
R46	2200Ω	
R47	33K	
R48	15K	
R49	220K	
R50	470K	
R51	680K	
R52	150K	
R53	2200Ω	
R54	33K	
R55	220K	
R56	2200Ω	
R57	33K	
R58	15K	

Note 1. Not used in Tuner Chassis 1141.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		HOFFMAN PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Trans.	776003						
L2	RF Choke	750008	19-1000	19-1000	BC-561	4602		1.1uh
L3	RF Choke	750009	19-2013	19-2013	SW-631	4609		5.6uh ①
L4	Fil. Choke	750007	19-1000	19-1000	BC-561	4602		1.1uh
L5	FM RF Coil	776001						
L6	FM Osc. Coil	768009						
L7	1st FM IF Trans.	760012	16-3487	16-3487	FM-254	1463		
L8	Loopstick	924002	14-9003	14-9003	BC-418	705-A		
L9	AM Osc. Coil	768010	14-1055	14-1055		70-OSC		
L10	1st AM IF Trans.	760011	16-6758	16-6758	BC-352	12-C1	RF-1	
L11	2nd FM IF Trans.	760013	16-3487	16-3487	FM-254	1463		
L12	2nd AM IF Trans.	760011	16-6758	16-6758	BC-353	12-C2	RF-2	
L13	Ratio Det.	774004	17-3498	17-3498	FM-255	1465		

① IRC Part #CL1.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA								
	HOFFMAN PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M1	981022 ① (Includes M3)	13TB	Not Req.	26S	S1-1 S3-3	53	J-43 & J-47X	10T2-S	Not Req.

① Part #981021 used in Models 8008, 8009.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	HOFFMAN PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M2		W-204DS *‡ or W-204DD-1 *♦		† Jewel, Dual ♦ Diamond, Dual ‡ Dual Sapphire * Includes Cartridge

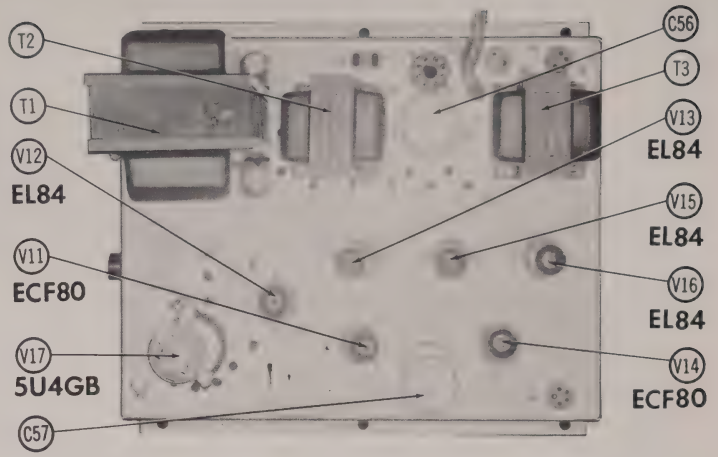
MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M3	Tuning Cap.	872009	FM-AM, 6 Gang, (AM Sections: Ant. 9-288mmf, Osc. 9-294mmf)
M4	Switch	902033	Input Selector (Rotary)
M5	Switch	902032	Mode Selector (Rotary)

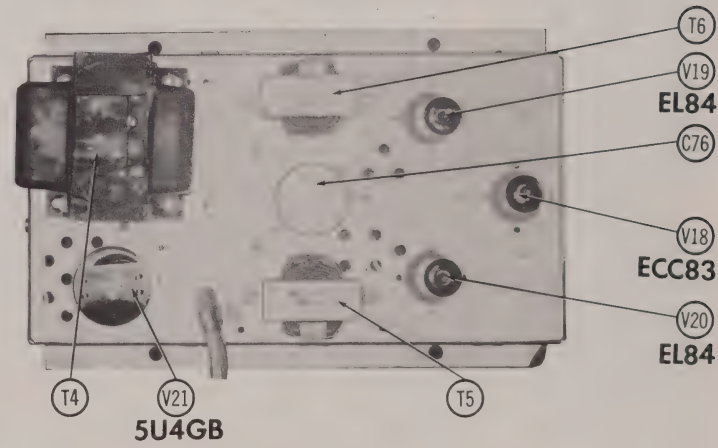
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

1136 AMP CHASSIS - TOP VIEW



1140 CHASSIS - TOP VIEW



ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Use only enough generator output to provide a usable indication.
Suggested alignment tools: A1 thru A4, A8 thru A13. . GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A14, A17..... GENERAL CEMENT #8721, 8722
WALSCO #2519
A6, A7, A18, A19..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A15, A16..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT—SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	AC probe across tuner output cable.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	High side thru 150mmf to AM antenna terminal. Low side to chassis.	600KC	600KC	"	A5	"
3.	"	1620KC	Tuning gang fully closed.	"	A6	"
4.	"	1400KC	1400KC	"	A7	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .01mfd to point (A). Low side to chassis.	10.7MC (Unmod.)	(FM) Tuning gang fully open.	DC probe to point (B). Common to chassis.	A8, A9, A10, A11, A12	Adjust for maximum deflection.
6.	"	"	"	DC probe to point (C). Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .01mfd to point (A). Low side to chassis.	10.7MC (450KC Swp)	(FM) Tuning gang fully open.	Vert. amp. to point (B). Low side to chassis.	A8, A9, A10, A11, A12	Disconnect stabilizing capacitor (C2). Adjust for maximum gain and symmetry of response similar to Fig. 1. Reconnect C2.
6.	"	"	"	Vert. amp. to point (C). Low side to chassis.	A13	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 120Ω in each lead.	90MC (Unmod.)	(FM) 90MC	DC probe to point (B). Common to chassis.	A14, A15, A16	Adjust for maximum output.
8.	"	107MC	107MC	"	A17, A18, A19	Adjust for maximum deflection. Repeat Steps 7 and 8.

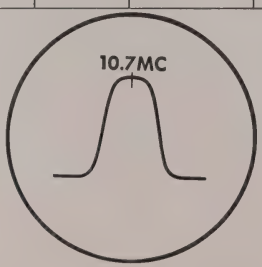


FIG. 1

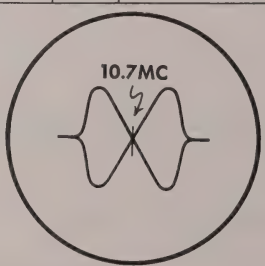
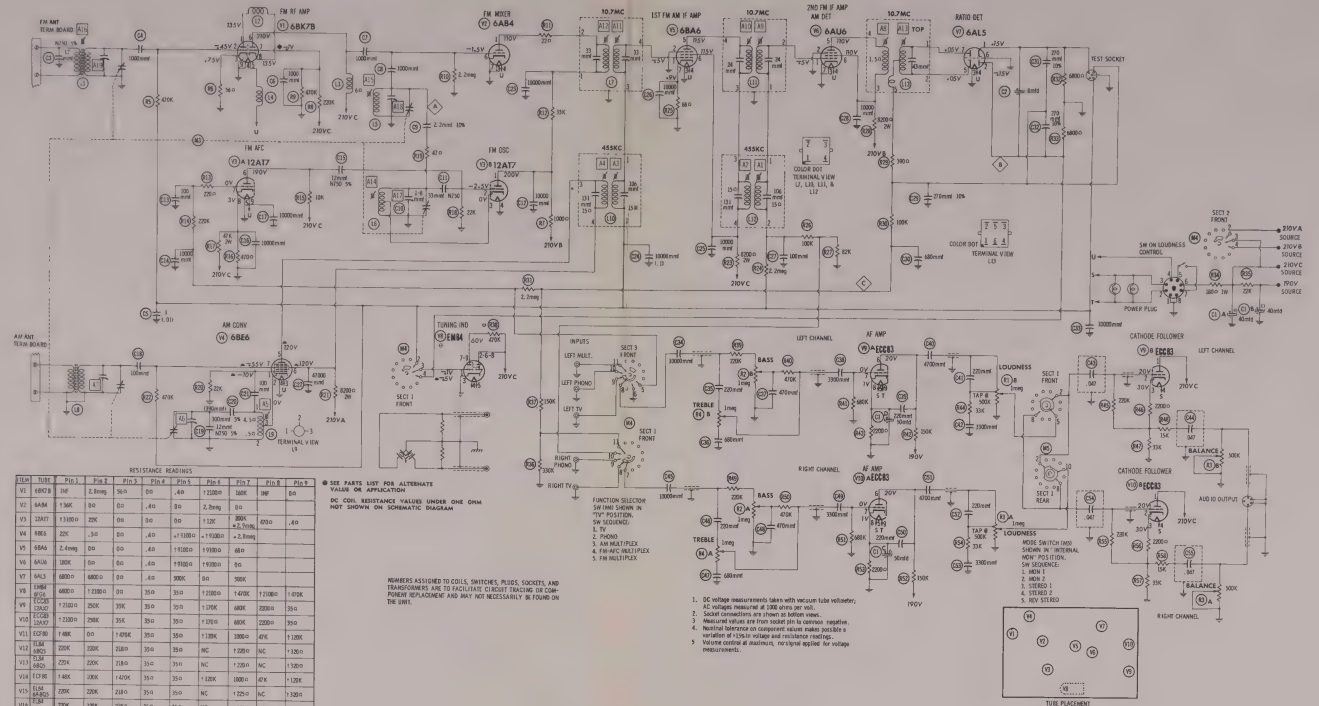


FIG. 2



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BK7B	INF	2.8meg	56Ω	0Ω	.4Ω	↑220Ω	160K	INF	0Ω
V2	6AB4	↑36K	0Ω	0Ω	.4Ω	0Ω	2.2meg	0Ω		
V3	12AT7	↑330Ω	25K	0Ω	0Ω	0Ω	↑12K	880K ±2.5meg	470Ω	.4Ω
V4	6BE6	22K	50Ω	0Ω	0Ω	.4Ω	↑100Ω	↑930Ω	2.8meg	
V5	6BA6	2.4meg	0Ω	0Ω	0Ω	.4Ω	↑100Ω	↑930Ω	68Ω	
V6	6AU6	180K	0Ω	0Ω	0Ω	.4Ω	↑150Ω	↑930Ω	0Ω	
V7	6AL5	6800Ω	6800Ω	0Ω	0Ω	.4Ω	900K	0Ω	900K	0Ω
V8	EM84 6FG6	660Ω	↑220Ω	0Ω	35Ω	35Ω	↑220Ω	↑470K	↑220Ω	↑470K
V9	ECC83 12AU7	↑220Ω	250K	35K	35Ω	35Ω	↑170K	680K	220Ω	35Ω
V10	ECC83 12AU7	↑220Ω	250K	35K	35Ω	35Ω	↑170Ω	680K	220Ω	35Ω
V11	EQ80	148K	0Ω	1.470K	35Ω	35Ω	↑135K	3000Ω	47K	↑135K
V12	EL84 6BQ5	220K	220K	218Ω	35Ω	35Ω	NC	↑225Ω	NC	↑135Ω
V13	EL84 6BQ5	225K	220K	218Ω	35Ω	35Ω	NC	↑225Ω	NC	↑135Ω
V14	EQ80	148K	200K	1.470K	35Ω	35Ω	↑135K	1800Ω	47K	↑135K
V15	EL84 6BQ5	220K	220K	218Ω	35Ω	35Ω	NC	↑225Ω	NC	↑135Ω
V16	EL84 6BQ5	225K	225K	218Ω	35Ω	35Ω	NC	↑225Ω	NC	↑135Ω
V17	5AG4	NC	¶	NC	22Ω	NC	30Ω	NC	¶	
V18	ECC83 12AX7	↑↑220K	2.2meg	2200Ω	70Ω	70Ω	↑↑220K	2.2meg	2200Ω	70Ω
V19	EL84 6BQ5	330K	330K	250Ω	70Ω	70Ω	NC	↑↑150Ω	NC	↑↑190Ω
V20	EL84 6BQ5	330K	330K	150Ω	70Ω	70Ω	NC	↑↑150Ω	NC	↑↑190Ω
V21	5AG4	¶	¶	¶	31Ω	¶	36Ω	¶	¶	

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
■ MEASURED IN "AM" POSITION. ↑ MEASURED FROM PIN 8 OF V12.
▲ MEASURED IN "FM AFC" POSITION. ↑↑ MEASURED FROM PIN 8 OF V22.
NC NO CONNECTION.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum; no signal applied for voltage measurements.

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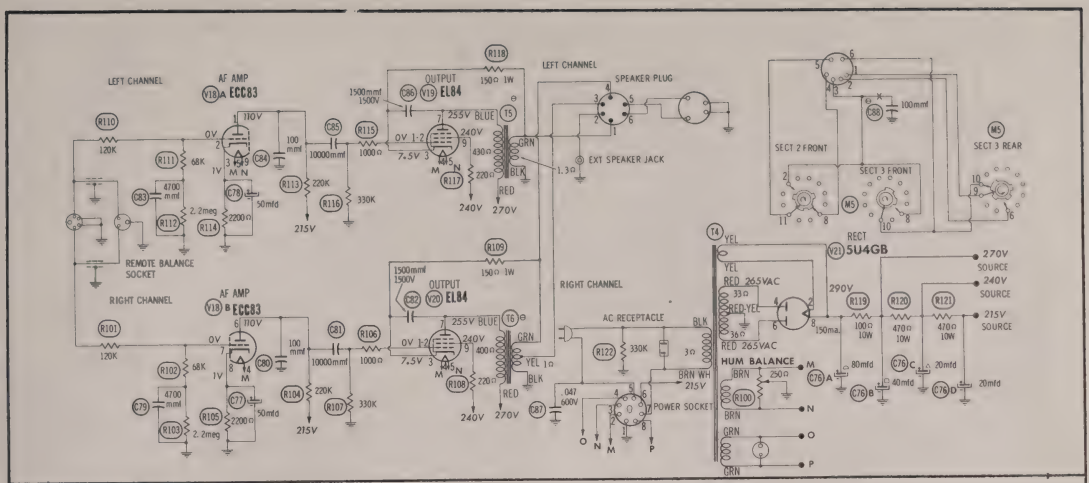
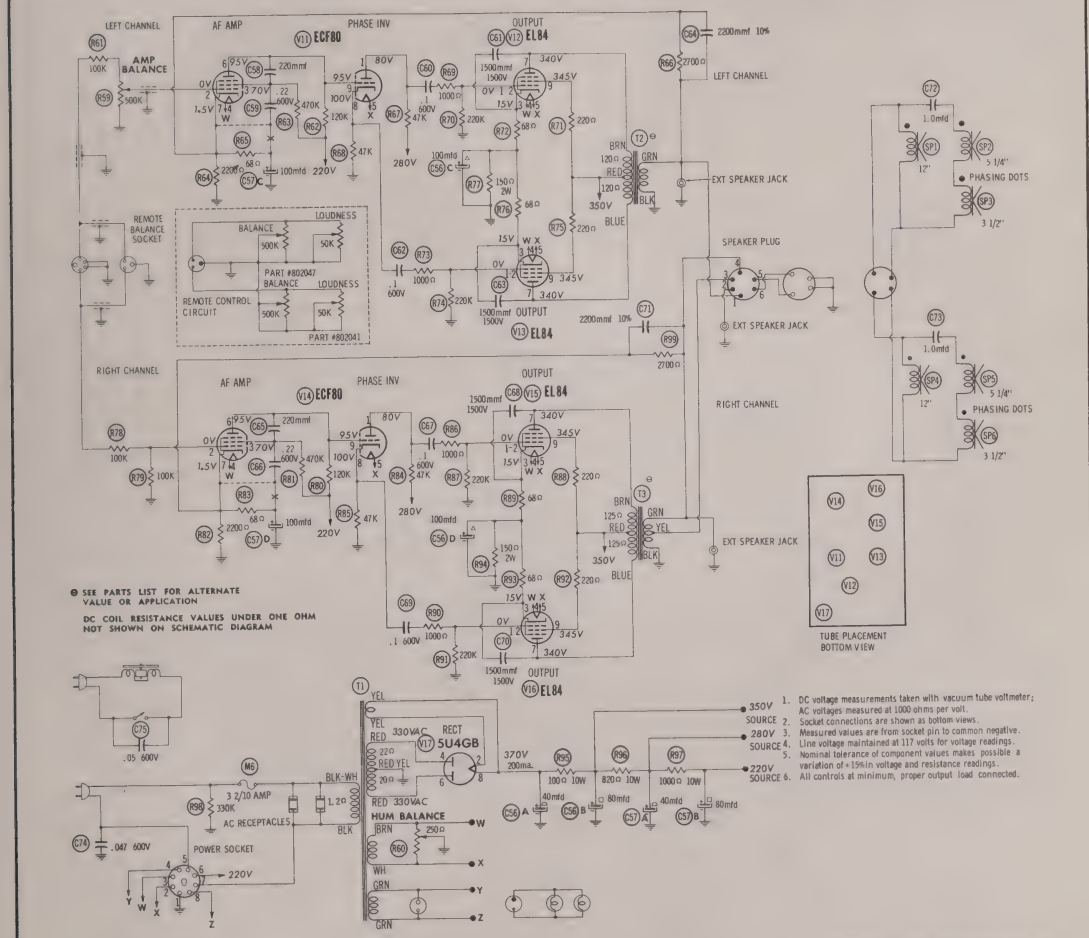
HOFFMAN MODELS 8008, 8009, 8010 (Ch. 1136, 1138, 1140, 1141)

TUNER SCHEMATIC





1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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HOFFMAN MODELS 8008, 8009, 8010 (Ch. 1136, 1138, 1140, 1141)

AMP SCHEMATIC

1136 AMP PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V11	Left Channel AF Amp. - Phase Inverter	ECF80	V15	Right Channel Output	EL84/6BQ5 (7189) *
V12	Left Channel Output	EL84/6BQ5 (7189) *	V16	Right Channel Output	EL84/6BQ5 (7189) *
V13	Left Channel Output	EL84/6BQ5 (7189) *	V17	Rectifier	5U4GB
V14	Right Channel AF Amp. - Phase Inverter	ECF80			

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C56A	▬40	450	857107	AFHS4-100-65	C1110	FP364	TMT-136	TVL-3683	
B	■80	450			BBR100-25	TC2501	TD-100-25	TVA-1207	
C	▲100	25							
D	100	25							
C57A	▬40	450	857107	AFHS4-100-65	C1110	FP364	TMT-136	TVL-3683	
B	■80	450			BBR100-25	TC2501	TD-100-25	TVA-1207	
C	▲100	25							
D	100	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C58	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C59	.22 600V		P688N-22		CUB6P22	6DP-5-224	GEM-6022	6TM-P22
C60	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C61	1500 1500V		HVD-15-1500	DD30-152	HVB20D15	16DP-1-152	2HV-215	30GA-D15
C62	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C63	1500 1500V		HVD-15-1500	DD30-152	HVB20D15	16DP-1-152	2HV-215	30GA-D15
C64	2200 10%		1464-0022		1R5D22	CM-19B-222K	MCJ459	MS-222
C65	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C66	.22 600V		P688N-22		CUB6P22	6DP-5-224	GEM-6022	6TM-P22
C67	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C68	1500 1500V		HVD-15-1500	DD30-152	HVB20D15	16DP-1-152	2HV-215	30GA-D15
C69	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C70	1500 1500V		HVD-15-1500	DD30-152	HVB20D15	16DP-1-152	2HV-215	30GA-D15
C71	2200 10%		1464-0022		1R5D22	CM-19B-222K	MCJ459	MS-222
C72	1.0 100V		P282Z-1.0		MP2W1		GEM-21	118P10502S2
C73	1.0 100V		P282Z-1.0		MP2W1		GEM-21	118P10502S2
C74	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C75	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA HOFFMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R59A	500K	½	800067	AB-59	B47-500K-S	B11-133	PTA55L	Amp. Balance
B	Shaft			AK-1	Not Req.	TM4	Not Req.	
R60A	250Ω	½	800014	AB-2		B11-201	R50L	Hum Adjust
B	Shaft			AK-1		TM4	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R61	100K	
R62	120K	
R63	470K	
R64	2200Ω	
R65	68Ω	
R66	2700Ω	
R67	47K	
R68	47K	
R69	1000Ω	
R70	220K	
R71	220Ω	
R72	68Ω	
R73	1000Ω	

ITEM No.	RATING	REMARKS
R74	220K	
R75	220Ω	
R76	68Ω	
R77	150Ω 2W	
R78	100K	
R79	100K	
R80	120K	
R81	470K	
R82	2200Ω	
R83	68Ω	
R84	47K	
R85	47K	
R86	1000Ω	

ITEM No.	RATING	REMARKS
R87	220K	
R88	220Ω	
R89	68Ω	
R90	1000Ω	
R91	220K	
R92	220Ω	
R93	68Ω	
R94	150Ω 2W	
R95	100Ω 10W	IRC #PW10 100Ω
R96	820Ω 10W	IRC #PW10 820Ω
R97	1000Ω 10W	IRC #PW10 1000Ω
R98	330K	
R99	2700Ω	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 1.5A	660 VCT @ .200A	5V @ 3A	716021-2						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 4.4A	6.1V @ 2.4A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	9000Ω CT	16Ω	724029	22S93	A-3128①		A-3885①	22S93		
T3	6800Ω CT	16Ω Tap @ 8Ω	724030	24S57	A-3130①		A-3801①	24S57		

① Drill New Mounting Hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA HOFFMAN PART No.	QUAM PART No.	NOTES
SP1	12"	PM	14-16Ω	708814X	12A1Z12.4	* Models 8010 Series only
SP2	5 1/4"	PM	14-16Ω	708203-1 *	52A1Z15.9	
SP3	3 1/2"	PM	14-16Ω	708015 *	3A15TZ15.9	
SP4	12"	PM	14-16Ω	708814 *	12A1Z12.4	
SP5	5 1/4"	PM	14-16Ω	708203-1 *	52A1Z15.9	
SP6	3 1/2"	PM	14-16Ω	708015 *	3A15TZ15.9	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA HOFFMAN PART No. FUSE	HOFFMAN PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M6	3AG	3 2/10A 125V S/B	954227		31303.2 (3AG 3 2/10A 125V) S/B	342001	MDX 3 2/10	HKP

1140 AMP PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V18	Left Channel AF Amp.	ECC83/12AX7	V20	Right Channel Output	EL84/6BQ5 (7189) *
V19	Right Channel AF Amp.	(ECC83/7025) *	V21	Rectifier	5U4GB
	Left Channel Output	EL84/6BQ5 (7189) *			

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C76A	▲80	400	857105	AFH4-93-50	C0370	FP420.46	TMT-43	TVLS-4657.8*	
B	■40	350			BR2035		TD-20-350		
C	▲20	300							
D	20	300							
C77	50	6	856018-1	PRS1265	BBR50-6	TT6X50	ML50-6	TE-1100	①
C78	50	6	856018-1	PRS1265	BBR50-6	TT6X50	ML50-6	TE-1100	①

① Some versions may use 25mfd 3V in this application (Part #856016).
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C79	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C80	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C81	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C82	1500 1500V		HVD-15-1500	DD30-152	HVB20D15	16DP-1-152	2HV-215	30GA-D15
C83	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C84	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C85	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C86	1500 1500V		HVD-15-1500	DD30-152	HVB20D15	16DP-1-152	2HV-215	30GA-D15
C87	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C88	100	Note 1	BPD-001	DD-101	L10T1	CCD-101	GP310	10TS-T10

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	HOFFMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R100A	250Ω	½	800014	AB-2		B11-201	R250L	Hum Adjust
B	Shaft			AK-1		BM4	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R101	120K	
R102	68K	
R103	2.2meg	
R104	220K	
R105	2200Ω	
R106	1000Ω	
R107	330K	
R108	220Ω	

ITEM No.	RATING	REMARKS
R109	150Ω 1W	
R110	120K	
R111	68K	
R112	2.2meg	
R113	220K	
R114	2200Ω	
R115	1000Ω	
R116	330K	

ITEM No.	RATING	REMARKS
R117	220Ω	
R118	150Ω 1W	
R119	100Ω 10W	IRC #PW10 100Ω
R120	470Ω 10W	IRC #PW10 470Ω
R121	470Ω 10W	IRC #PW10 470Ω
R122	330K	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T4	117V@ 1A	530 VCT @.150A	5V@3A	716019-2 ①						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V@ 2.7A	6.1A@ 2.4A								

① Alternate Part #716019.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	5000Ω	16Ω Tap @ 8Ω	724035-1①	24S92 ②				24S92②		
T6	5400Ω	6-8Ω	724034-1③	24S07	A-2902	AU-604	A-3849	24S07	S-53X	

① Alternate Part #934035.
② Drill New Mounting Hole.
③ Alternate Part #934034.

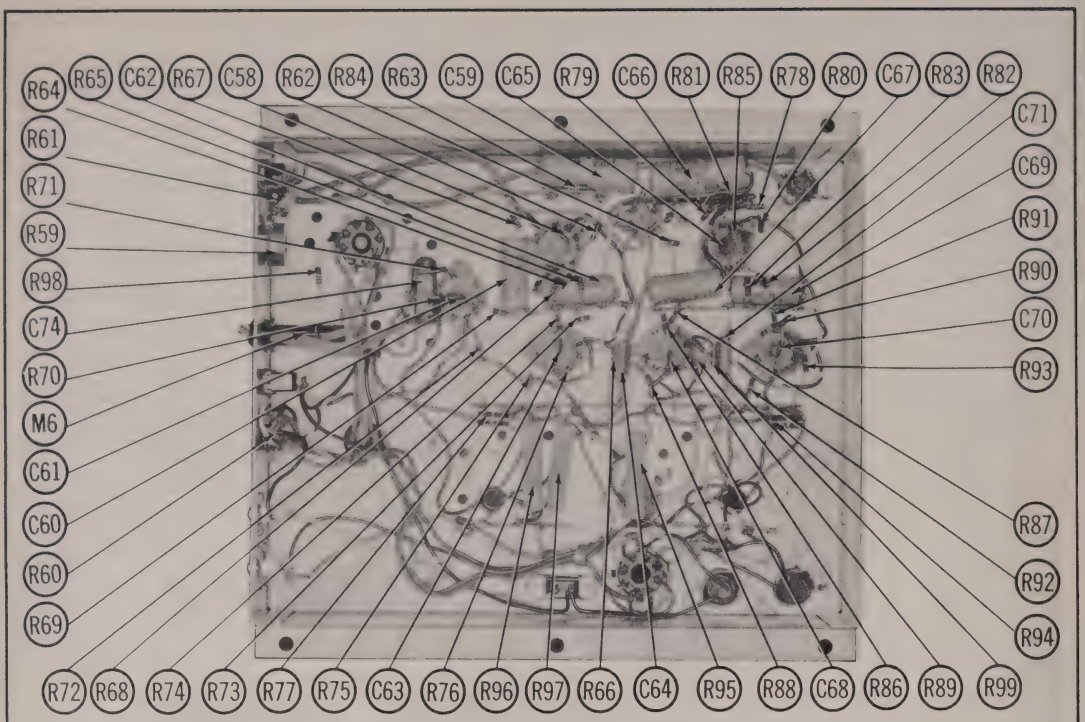
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	HOFFMAN PART No.	QUAM PART No.	NOTES
	12"	PM		708815 *		* Models 8009 Series only
	8"	PM		708606 †		† Models 8008, 8009 Series
	4"	PM	3-4Ω	708017 †	4A1	

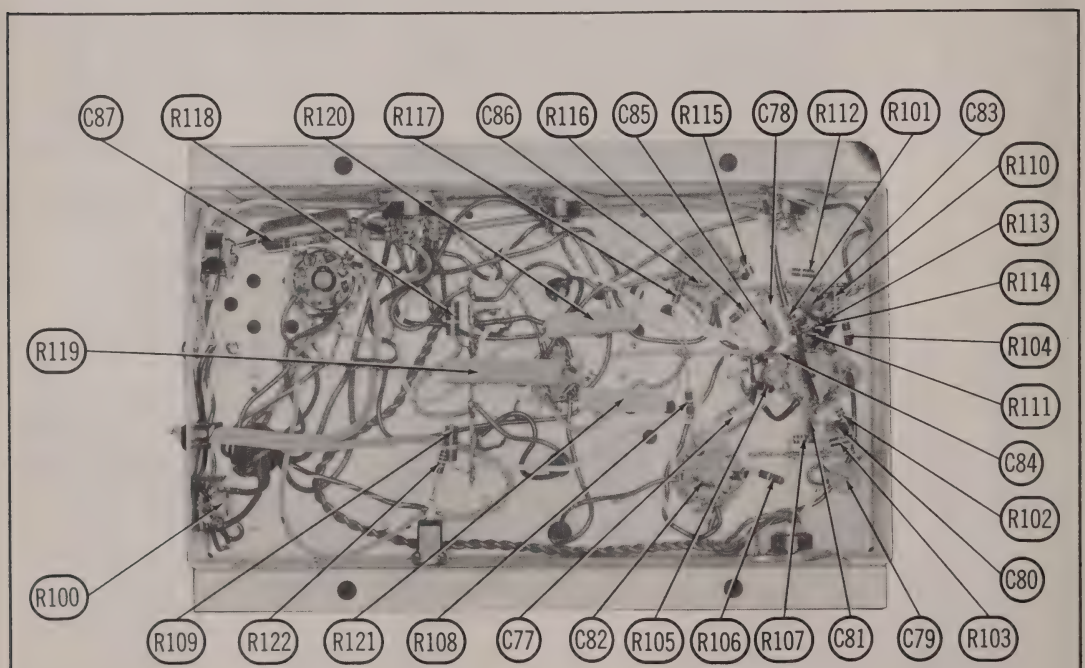
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	500062	Tuning, All Models, Bass & Treble, Models 8009, 8010 Series
Knob	500059	Loudness, Mode, Input Selector, & Balance All Models Bass, & Treble, Model 8008 Series
Dial Glass	619034	Model 8008 Series
Dial Glass	619033	Models 8009, 8010 Series
Cabinet	381053	Model W8008
Cabinet	381054	Model M8008
Cabinet	381055	Model B8003
Cabinet	381056	Model SP8008
Cabinet	381049	Model W8009
Cabinet	381050	Model M8009
Cabinet	381051	Model B8009
Cabinet	381052	Model SP8009
Cabinet	381045	Model W8010
Cabinet	381046	Model M8010
Cabinet	381047	Model B8010
Cabinet	381048	Model SP8010



1136 AMP CHASSIS - BOTTOM VIEW



1140 AMP CHASSIS - BOTTOM VIEW

PHOTOFACT® Folder

**LAFAYETTE MODELS
KT-250, LA-250**

LAFAYETTE MODELS
KT-250, LA-250

MODEL LA-250

LAFAYETTE MODELS
KT-250, LA-250

TRADE NAME	Lafayette Models KT-250, LA-250
SUPPLIER	Lafayette Radio, 165-08 Liberty Ave., Gamaica 33, N. Y.
TYPE SET	AC Operated 9 Tube Stereo Audio Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 120 Watts, 1.2 Amp. @117 Volts AC

ADJUSTMENTS

BIAS AND BALANCE ADJUSTMENTS

Turn both Bias controls fully clockwise and both Balance controls to the center of their range. Set the Volume-Balance controls fully counterclockwise, Bass and Treble controls to the center of their range.
Set the A Amplifier switch to "A", B Amplifier switch to "B" and Selector switch to "AUX".

Channel "A"

Preset the Channel "A" Bias control for .3 volts DC on pin 3 (cathode) of either Channel "A" Output tubes. Measure the cathode voltage on the other Channel "A" Output tube and adjust the Channel "A" Balance control for a reading half way between this voltage and .3 volts. Readjust Channel "A" Bias control for .48 volts DC on the cathode of both Channel "A" Output tubes.

Channel "B"

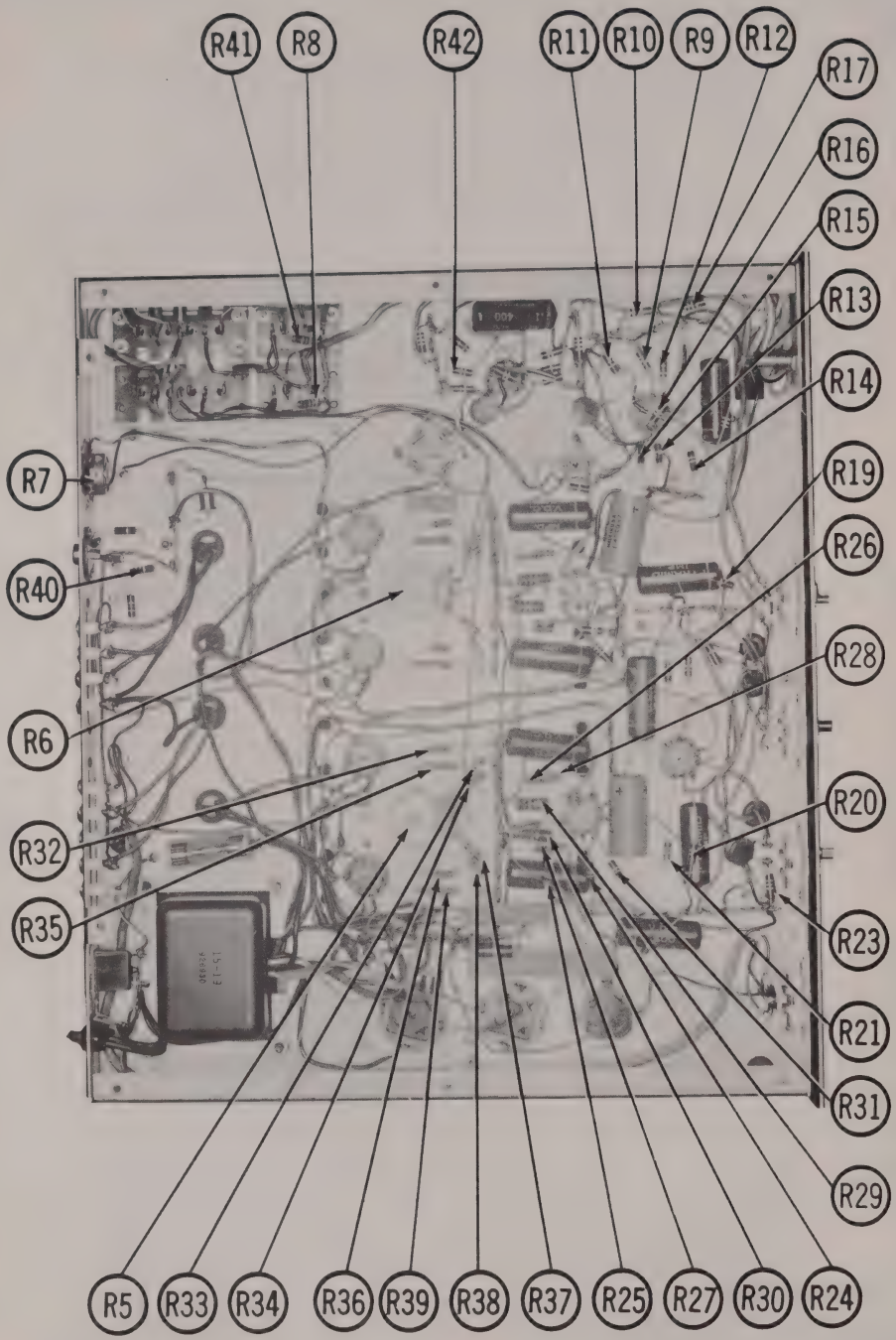
Repeat above procedure substituting Channel "B" for Channel "A".

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

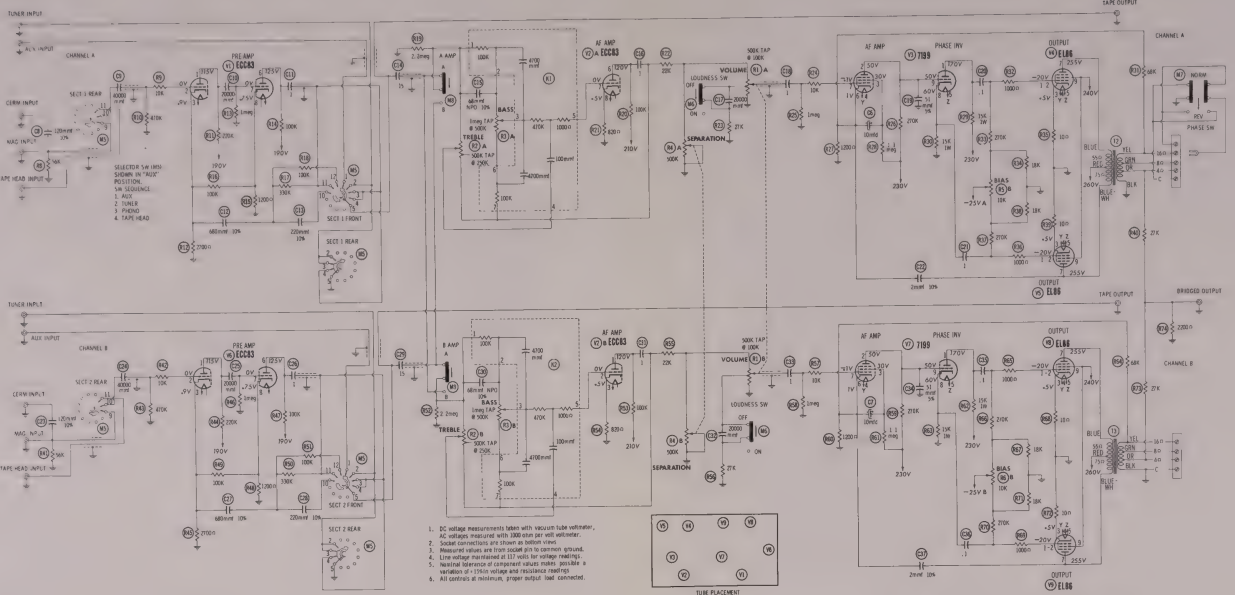
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JV981

SET 501 FOLDER 8



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±10% in voltage and resistance readings
6. All controls at minimum, proper output load connected.

TUBE PLACEMENT BOTTOM VIEW

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 (12AX7)	*.25K	68K	270Ω	12Ω	2kΩ	*.115K	1meg	1200Ω	1Ω
V2	ECC83 (12AX7)	*.105K	70K	820Ω	3kΩ	2kΩ	*.105K	780K	820Ω	3Ω
V3	7199	*.18K	*.27Ω	*.1 1meg	20Ω	20Ω	1200Ω	1meg	15K	*.270K
V4	EL86	280K	250K	1Ω	25Ω	20Ω	NC	115Ω	NC	*450Ω
V5	EL86	280K	250K	1Ω	25Ω	20Ω	NC	*75Ω	NC	*450Ω
V6	ECC83 (12AX7)	*.25K	68K	270Ω	1Ω	2Ω	*.115K	1meg	1200Ω	1Ω
V7	7199	*.18K	*.27K	*.1 1meg	20Ω	20Ω	1200Ω	1meg	15K	*.270K
V8	EL86	280K	280K	1Ω	25Ω	25Ω	NC	115Ω	NC	*450Ω
V9	EL86	280K	280K	1Ω	25Ω	25Ω	NC	*75Ω	NC	*450Ω

* MEASURED FROM OUTPUT OF VOL NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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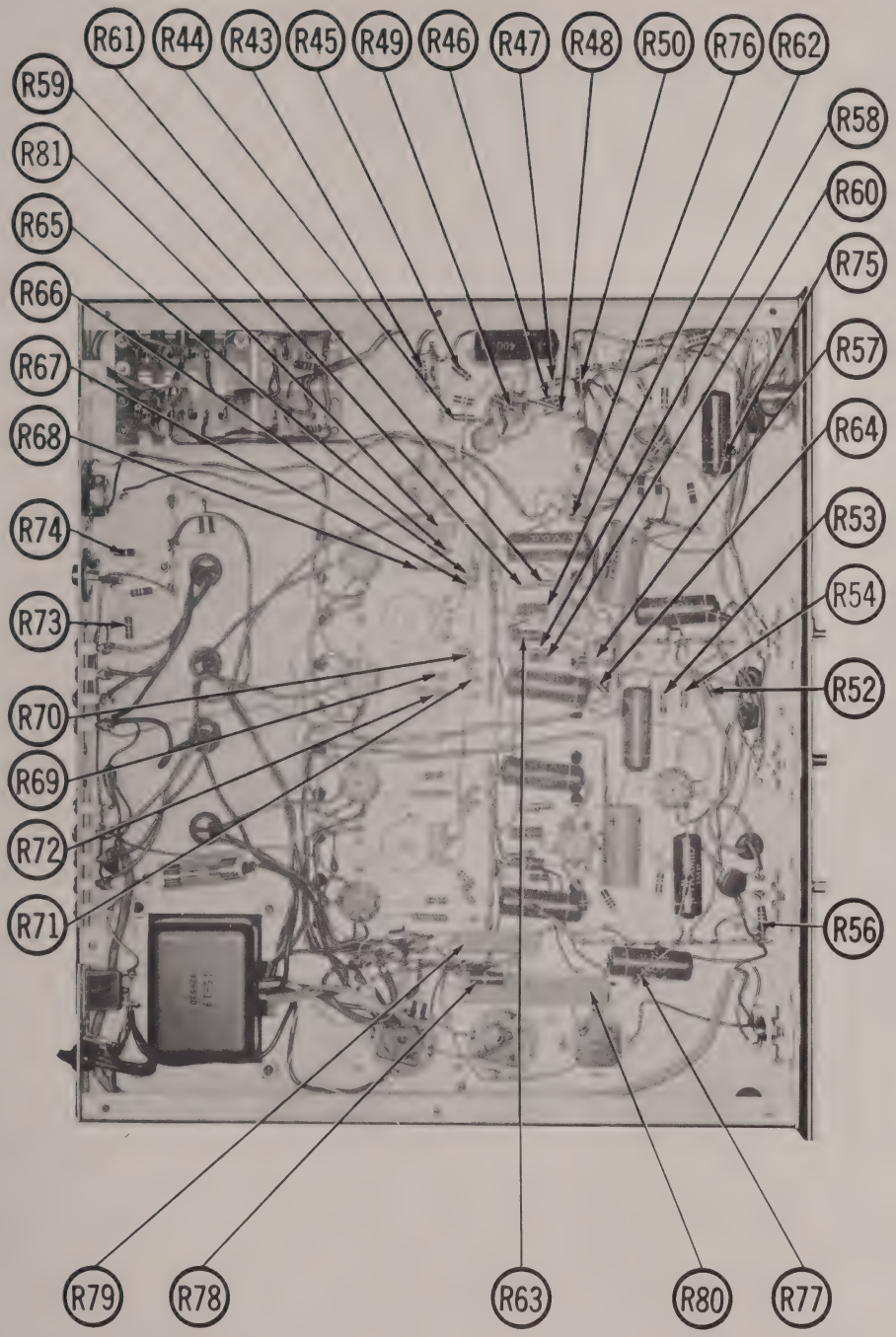
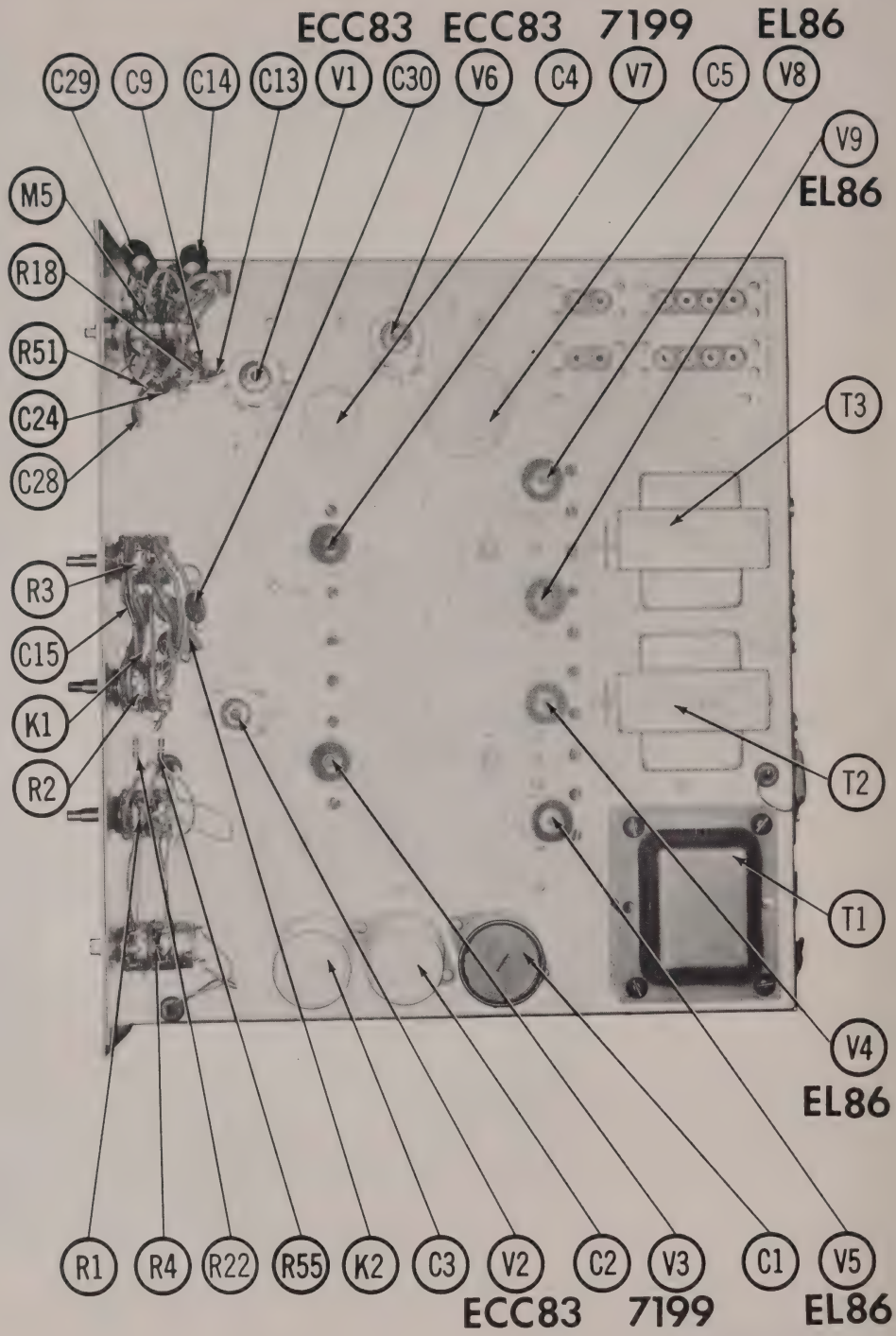
LAFAYETTE MODELS KT-250, LA-250



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	Channel A Preamp.	ECC83/12AX7
V2	Channel A AF Amp. - Channel B AF Amp.	ECC83/12AX7
V3	Channel A AF Amp. - Channel A Phase Inv.	7199
V4	Channel A Output	EL86
V5	Channel A Output	EL86
V6	Channel B Preamp.	ECC83/12AX7
V7	Channel B AF Amp. - Channel B Phase Inv.	7199
V8	Channel B Output	EL86
V9	Channel B Output	EL86

ELECTROLYTIC CAPACITORS

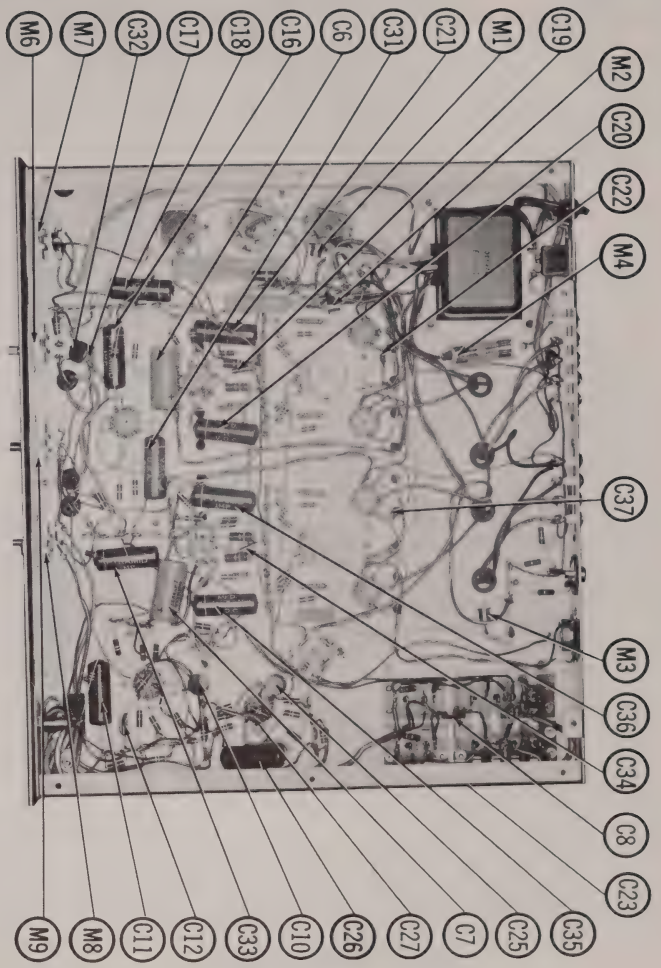
ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA LAFAYETTE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	250	200	12-109			FP126 / TC59	TMS-1290		
C2	250	200	12-110			FP126	TMS-1290		
C3A	▲20	250	12-108		XA0318	FP126	TMS-1480	TVL-1540	
B	■200	250			BR2025	TC55	TD-20-250	TVA-1508	
C4A	■60	250	12-106	AFH2-29	XA0324	FP137.2	TMS-1460	TVL-1525	
B	▲60	250			BR6025	TC68	TD-60-250	TVA-1613	
C5A	▲270	75	12-107						
B	100	75							
C	■100	75							
D	▲100	75							
C6	10	200	12-116	PRS1620	BR1045	TC52	TD-10-250	TVA-1504	
C7	10	200	12-116	PRS1620	BR1045	TC52	TD-10-250	TVA-1504	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	120 10%		DI-120	DD-121	L10T12	CCD-121	GP312	10TS-T12
C9	40000			DD-403	BYB6S4	6DP-3-403	GP140	5HK-S40
C10	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C11	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C12	680 10%		DI-680	DD-681	5R5T68	CCD-681	GP368	10TS-T68
C13	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C14	.15 200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C15	68 NPO 10%		NPO-DI 68	DTZ-68	C10Q68C	CCTO-680	CNO-468	10TCC-Q68
C16	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C17	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C18	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C19	51 5%			TCZ-51	C10Q51C	CCTO-510	CNO-450	10TCC-Q50
C20	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C21	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C22	2 10%		NPO-DI 2.2	DTZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22
C23	120 10%		DI-120	DD-121	L10T12	CCD-121	GP312	10TS-T12
C24	40000			DD-403	BYB6S4	6DP-3-403	GP140	5HK-S40
C25	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C26	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C27	680 10%		DI-680	DD-681	5R5T68	CCD-681	GP368	10TS-T68
C28	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C29	.15 200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C30	68 NPO 10%		NPO-DI 68	DTZ-68	C10Q68C	CCTO-680	CNO-468	10TCC-Q68
C31	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C32	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C33	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C34	51 5%			TCZ-51	C10Q51C	CCTO-510	CNO-450	10TCC-Q50
C35	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C36	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C37	2 10%		NPO-DI 2.2	DTZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA LAFAYETTE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	1/2	11-38					Volume, Channel A
	100K Tap							
B	500K	1/2						Volume, Channel B
	100K Tap							
R2A	500K	1/2	11-36	F3-42				Treble, Channel A
	250K Tap					† QJ-1281R		
B	500K	1/2		R4-42				Treble, Channel B
	250K Tap							
R3A	1meg	1/2	11-37	F1-56				Bass, Channel A
	500K Tap					‡ QJ-1282R	■ UE4135	
B	1meg	1/2		R2-56				Bass, Channel B
	500K Tap							
R4A	500K		11-35	B-59	AD47-500K-S		FA55A	Separation, Channel A
B	500K			SR-59	Not Req.		RU55A	Separation, Channel B
C	Shaft			Not Req.	FS-3		CS3500	
D	Switch			KR-1	SWE-12		US41	
R5A	5000Ω		11-34	F1-19		♦ QJ-1280R	▲ UE4136	Balance, Channel A
B	10K			R2-23				Bias, Channel A
R6A	5000Ω		11-34	F1-19		♦ QJ-1280R	▲ UE4136	Balance, Channel B
B	10K			R2-23				Bias, Channel B
R7	200Ω	2(WW)	11-39					Hum Balance

■ "STA-LOC" equivalent: FB16T55, RU16T55, OS687, IS937.
▲ "STA-LOC" equivalent: FA53L, RU14L, OK825, IK750.
† "Concentrikit" equivalent: K-5 Kit with base elements and shafts: B19-133X (Panel)
Not available as a factory assembled unit. B19-133X (Rear)
‡ "Concentrikit" equivalent: K-5 Kit with base elements and shafts: B19-137X, P1-020 (Panel)
Not available as a factory assembled unit. B19-137X, RI-028 (Rear)
♦ "Concentrikit" equivalent: K-5 kit with base elements and shafts: B11-114, P9-021 (Panel)
Not available as a factory assembled unit. B11-116, RI-024 (Rear)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R8	56K	
R9	10K	
R10	470K	
R11	220K	
R12	2700Ω	
R13	1meg	
R14	100K	
R15	1200Ω	
R16	100K	
R17	330K	
R18	100K	
R19	2.2meg	
R20	100K	
R21	820Ω	
R22	22K	
R23	27K	
R24	10K	
R25	1meg	
R26	270K	
R27	1200Ω	
R28	1.1meg	
R29	15K 1W	
R30	15K 1W	
R31	68K	
R32	1000Ω	

ITEM No.	RATING	REMARKS
R33	270K	
R34	18K	
R35	10Ω	
R36	1000Ω	
R37	270K	
R38	18K	
R39	10Ω	
R40	27K	
R41	56K	
R42	10K	
R43	470K	
R44	220K	
R45	2700Ω	
R46	1meg	
R47	100K	
R48	1200Ω	
R49	100K	
R50	330K	
R51	100K	
R52	2.2meg	
R53	100K	
R54	820Ω	
R55	22K	
R56	27K	
R57	10K	

ITEM No.	RATING	REMARKS
R58	1meg	
R59	270K	
R60	1200Ω	
R61	1.1meg	
R62	15K 1W	
R63	15K 1W	
R64	68K	
R65	1000Ω	
R66	270K	
R67	18K	
R68	10Ω	
R69	1000Ω	
R70	270K	
R71	18K	
R72	10Ω	
R73	27K	
R74	2200Ω	
R75	270K	
R76	8200Ω	
R77	4700Ω	
R78	2200Ω 1W	
R79	450Ω 7W	IRC#PW7 450Ω
R80	5000Ω 20W	IRC#2C 5000Ω
R81	33Ω 3W	IRC#PW3 33Ω

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	LAFAYETTE PART No.	REPLACEMENT DATA
K1	Tone Compensation	100mmf, 4700mmf, 4700mmf, 1000Ω, 100K, 100K, 470K	16-2	Centralab PC-190 Sprague TC-1
K2	Tone Compensation	100mmf, 4700mmf, 4700mmf, 1000Ω, 100K, 100K, 470K	16-2	Centralab PC-190 Sprague TC-1

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA LAFAYETTE PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V@ 1.2A	100V@ .900A	6.3V@ 4.1A	15-19						
	SEC. 3	SEC. 4	SEC. 5							
	35V@ .39A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	SEC.	REPLACEMENT DATA LAFAYETTE PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	2800Ω CT	16Ω Tap @ 8Ω, 4Ω	15-22						
T3	2800Ω CT	16Ω Tap @ 8Ω, 4Ω	15-22						

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA LAFAYETTE PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.270A	17-9 *	RE504 *	1N1764 *	SR500 *	F-4 *	* Silicon
M2	.270A	17-9 *	RE504 *	1N1764 *	SR500 *	F-4 *	
M3	.160A	17-10 *	RE504 *	1N1764 *	SR500 *	F-4 *	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA LAFAYETTE PART No. FUSE	LAFAYETTE PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M4	3AG	2A 125V S/B	20-176	20-175	313002 (3AG 2A 125V) S/B	357001	MDL 2	4405

MISCELLANEOUS

ITEM No.	PART NAME	LAFAYETTE PART No.	NOTES
M5	Switch	14-24	Selector
M6	Switch	14-23	Loudness (DPST, Slide Type)
M7	Switch	14-17	Phase (DPDT, Slide Type)
M8	Switch	14-16	A-Amp (SPDT, Slide Type)
M9	Switch	14-16	B-Amp (SPDT, Slide Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	18-29	Bass, Treble; Small
Knob	18-30	Volume, Balance; Small
Knob	18-31	Bass, Treble, Volume, Balance; Large
Knob	18-32	Selector, Separation
Cabinet	10-76	
Leg	20-163	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

MOTOROLA MODEL VWA60

MOTOROLA MODEL VWA60

TRADE NAME	Motorola Model VWA60 (For 1960 Volkswagen Automobiles)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated 6 Tube Custom Built Automobile AM Receiver
POWER SUPPLY	6 Volt Storage Battery
TUNING RANGE—BROADCAST	540 — 1610KC RATING 5.6 Amp. @6.3 Volts DC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1 thru A4....	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545
A5, A6, A7...	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A8, A9, A10....	GENERAL CEMENT #9050-L, 9150 WALSCO #2521, 2524

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to antenna receptacle. Low side to chassis.	262.5KC (400% Mod.)	High Freq. End Stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1610KC	"	"	A5, A6, A7	"
	Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9 and A10) out of coils but not out of coil forms. Repeat Step 2.					
3.	Thru dummy (Fig. 1) to antenna receptacle.	1200KC	Tuner carriage 9/32" from high freq. end stop.	Across voice coil.	A8, A9, A10	Adjust for maximum output. Repeat Steps 2 and 3.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

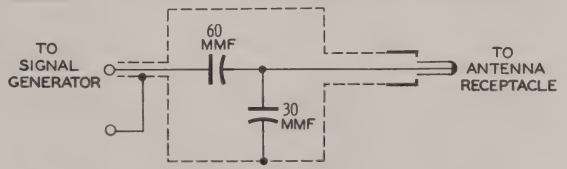


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KD101

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	6BA6	V4	Det.-AVC-AF Amp.	6CR6
V2	Converter	6BE6	V5	Output	6AQ5A
V3	IF Amplifier	6BA6	V6	Rectifier	6X4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■15	350	23K511188 ①	AFH3-104	C0770	FP328	TMT-89	TVL-3630	
B	▲10	350							
C	20	25							

① Alternate #23A485677.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	27 NPO 10%		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C3	40-430	#20B544018						
C4	.003 200V		P288N-003	D6-302	CUB6D3	6DP-1-302	GEM-623	6TM-D3
C5	20-120	#20K542018				302-M		
C6	27 NPO 10%		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C7	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C8	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C9	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C10	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C11	310-390	#20K542092						
C12	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C15	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C16	.002 600V		P688N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D2
C17	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C18	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C19	.004 600V		P488N-004	D6-402	CUB6D4	6DP-1-402	GEM-624	6TM-D4
C20	.02 1000V		P1088N-02		CUB10S2	16DP-4-203	GEM-1012	10TM-S2
C21	.5 100V		P288N-5		CUB2P5	2DP-5-504	GEM-205	2TM-P5
C22	.5 100V		P288N-5		CUB2P5	2DP-5-504	GEM-205	2TM-P5

Motorola Part Number.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K		18K543888	F1-41				Tone
B	2meg			R2-75	RTV-639C	† QJ-1273A	■ UE4130-S	Volume
	1meg Tap							
C	Switch			KR-4				Power Off-On

† "Concentrikit" equivalent: K-6 Kit with base elements and shafts: B13-133, P17-123 (Panel) B18-139X, R1-205 (Rear) 76-1 (Switch)

■ "STA-LOC" equivalent: FA55A, RU26T16, OS1750, IS2250, US41.

RESISTORS (IRC or EQUIVALENT)

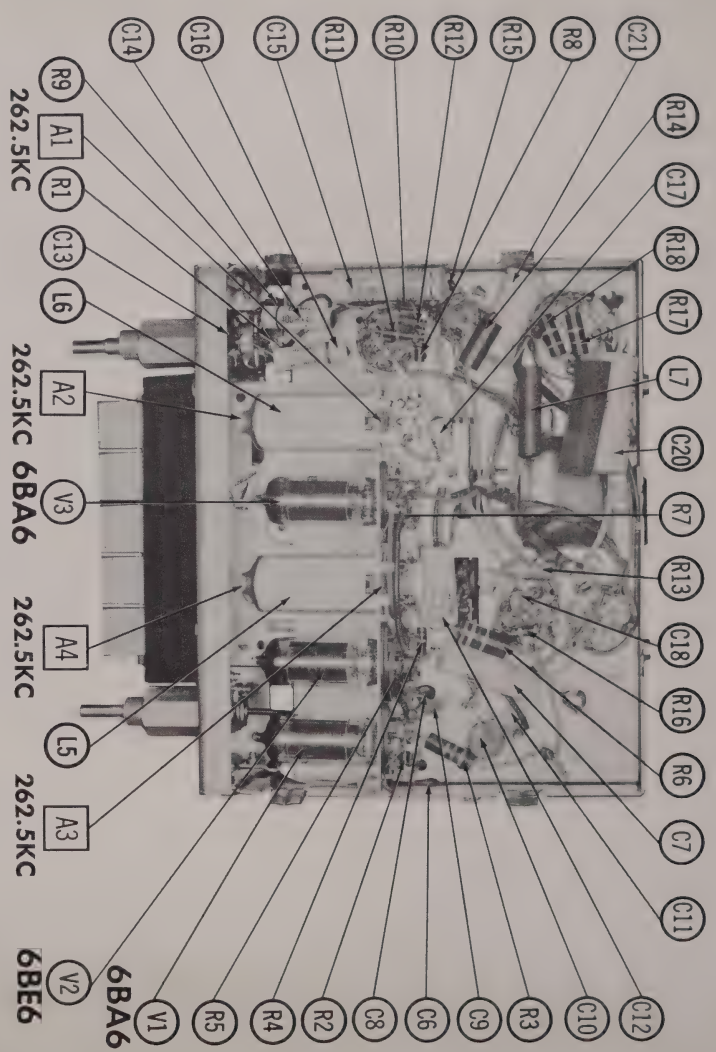
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	1meg	
R3	18K 1W	
R4	330K	
R5	22K	
R6	6800Ω 2W	
R7	330Ω	

ITEM No.	RATING	REMARKS
R8	3.3meg	
R9	47K	
R10	3.3meg	
R11	220K	
R12	1meg	
R13	330K 1W	

ITEM No.	RATING	REMARKS
R14	2200Ω 2W	
R15	270Ω	
R16	8.2meg	
R17	56Ω	
R18	56Ω	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	RF Choke	24K537545	BC-562	4604	VP-9	1.8uh
L2	Ant. Coil	24C535458 †				
L3	RF Coil	24C535458 †				
L4	Osc. Coil	24C535456 †				
L5	Input IF Trans.	24B543286	BC-350	12-H1	RF-3	
L6	Output IF Trans.	24K543287	BC-354	12-H6		
L7	Hash Choke	24A538914		5220		
L8	"A" Lead Hash Choke	24K542019				

† Part of M3 or coil and mounting plate assembly Part #1V542258.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	MOTOROLA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	6VCT @3.7A	420 VCT @.045A		25C537164B						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5300Ω	3-4Ω	25B70171	A-2930	AU-601	A-3877	24S51	S-3X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	50C543225	5A15	

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				MOTOROLA PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interruptor	6.3V	115V	48B3333	5342	903M	5342	

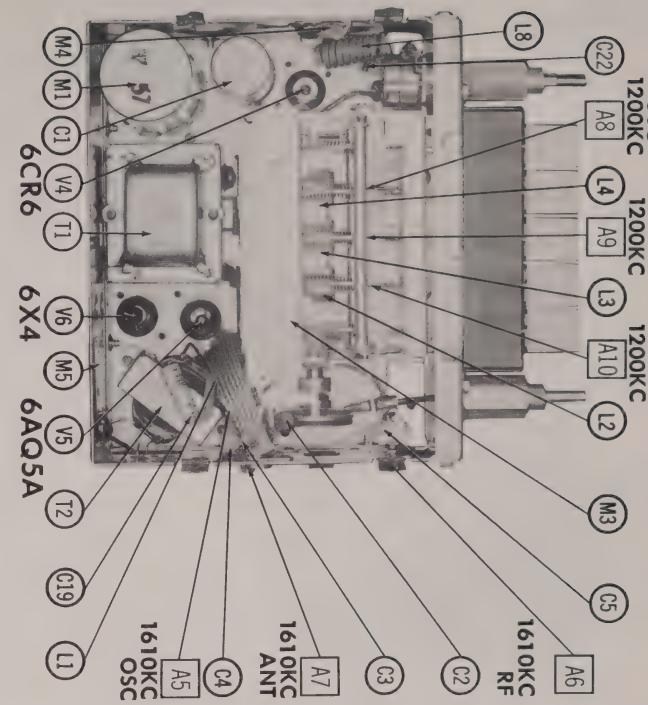
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	9A 32V	65R16248	9K541991	307009 (SFE 9A 32V)	155009	SFE 9	HRH

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Tuner	77K542165	(AT-233) Complete
M4	Spark Plate.	64K530177	(1" x 2")
M5	Spark Plate	64A530176	(1" x 1 3/4")

CHASSIS—TOP VIEW



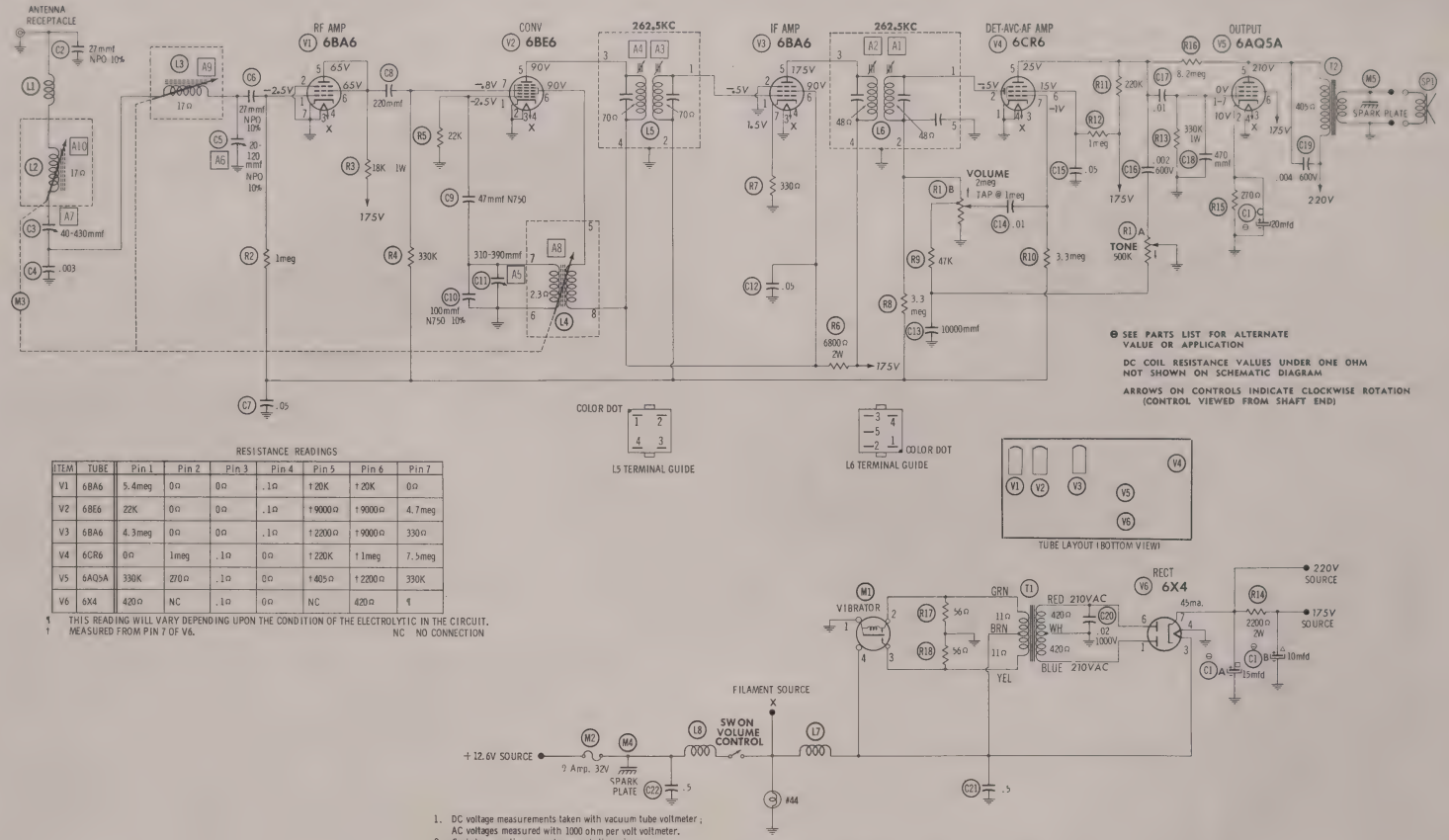
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36K542973	Tuning, Volume
Knob	36B522020	Tone
Knob	36K542005	Dummy
Pushbutton	38K542956	
Pointer	1V542214	
Dial Scale	34B542775	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	6BA6	5.4meg	0Ω	0Ω	.1Ω	†20K	†20K	0Ω
V2	6BE6	22K	0Ω	0Ω	.1Ω	†9000Ω	†9000Ω	4.7meg
V3	6BA6	4.3meg	0Ω	0Ω	.1Ω	†2200Ω	†9000Ω	330Ω
V4	6CR6	0Ω	1meg	.1Ω	0Ω	†220K	†1meg	7.3meg
V5	6AQ5A	330K	270Ω	.1Ω	0Ω	†405Ω	†2200Ω	330K
V6	6X4	420Ω	NC	.1Ω	0Ω	NC	420Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V6. NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

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MOTOROLA MODEL VWA60

PHOTOFACT® Folder

MUNTZ MODELS 815B, M, W

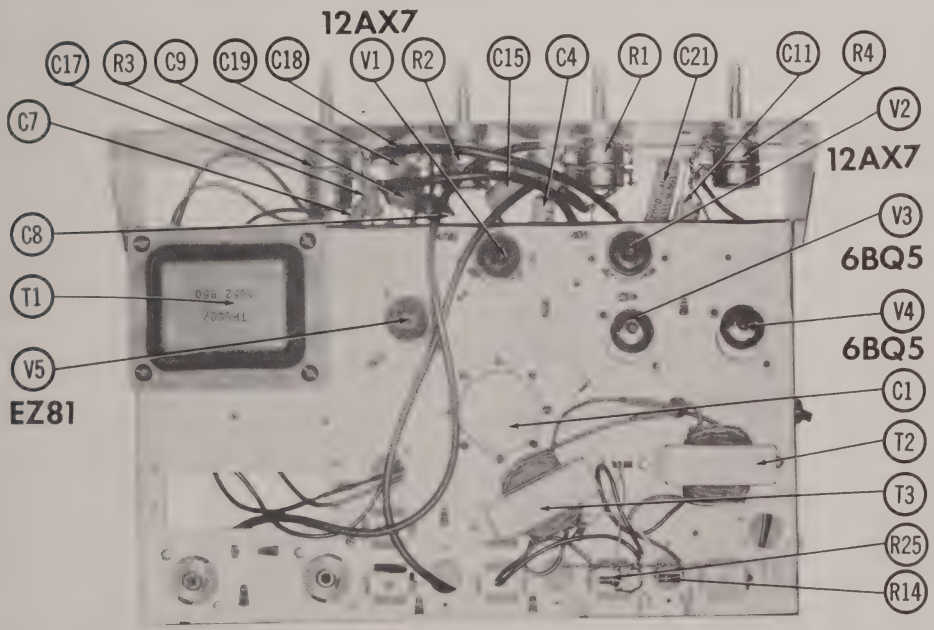
MUNTZ MODELS
815B, M, W

TRADE NAME	Muntz Models 815B, 815M, 815W
MANUFACTURER	Muntz TV, Inc., 1000 Grey Ave., Evanston, Illinois
TYPE SET	AC Operated 5 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 67 Watts, .65 Amp. @ 117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER PART #PH-0023-1 – SEE WEBCOR 170 – PHOTOFACT SET 447 FOLDER 13 OR RECORD CHANGER MANUAL RC-12.

FOR SERVICE INFORMATION ON RECORD CHANGER PART #PH-0021– SEE V-M1200 – PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10

MUNTZ MODELS
815B, M, W



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KT044

SET 501 FOLDER 10

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7	V3	Channel 1 Output	6BQ5
V2	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7	V4	Channel 2 Output	6BQ5
			V5	Rectifier	EZ81/6CA4

GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MUNTZ PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	350	CE8002	AFH-06-40	D0054	FP421.9	TMQ-4391	TVL-4674	
B	■40	350							
C	▲30	350							
D	20	350							
C2	100	50	CE0033	PRS1360	BR1005	TC3501	TD-100-50	TVA-1310	

FIXED CAPACITORS

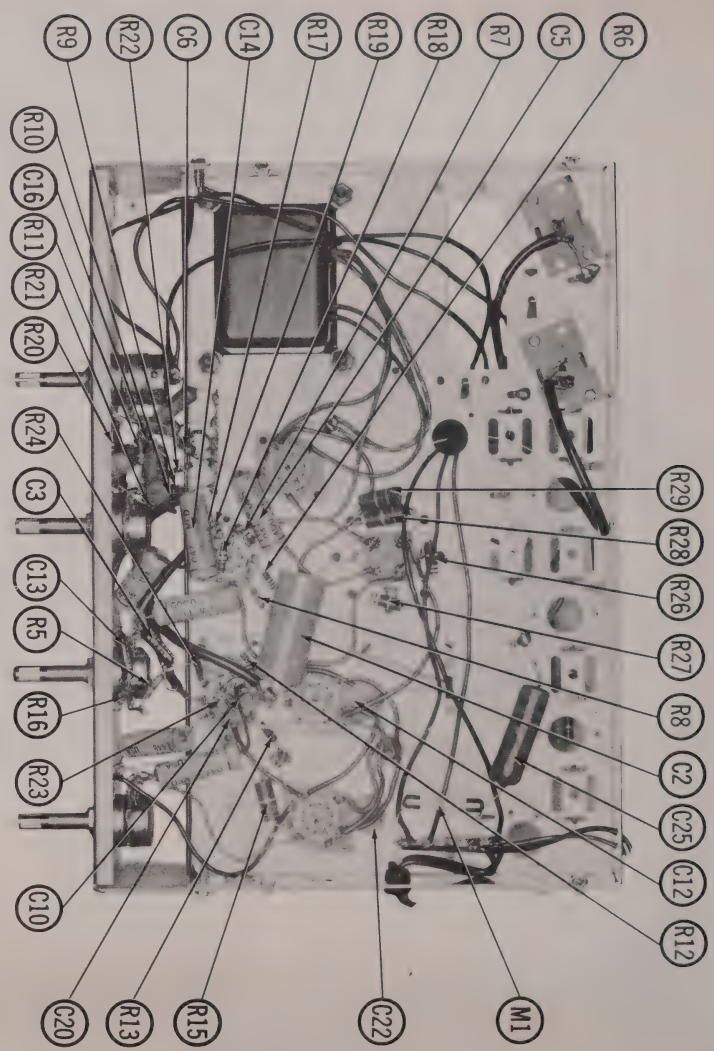
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.0022 600V 10%		V84C6D22-10%		PM6D22	6DP-1-222	GP222	6TM-D22
C4	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C5	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C6	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C7	.0022 600V 10%		V84C6D22-10%		PM6D22	6DP-1-222	GP222	6TM-D22
C8	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	10TS-T22
C9	.022 400V 10%		V84C4S22-10%		PM4S22	4DP-2-223	GEM-16122	4TM-S22
C10	220		DI-220	DD-221	L10T22	CCD-221	B-332	10TS-T22
C11	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	.0022 600V 10%		V84C6D22-10%		PM6D22	6DP-1-222	GP222	6TM-D22
C14	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C15	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C16	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C17	.0022 600V 10%		V84C6D22-10%		PM6D22	6DP-1-222	GP222	6TM-D22
C18	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-202	5HK-D20
C19	.022 400V 10%		V84C4S22-10%		PM4S22	4DP-2-223	GEM-16122	4TM-S22
C20	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C21	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C24	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C25	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MUNTZ PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	VC-8011	BT-71			FB16T55	Volume, Channel 2
B	500K Tap	½		STR-71			RU16T55	Volume, Channel 1
C	1meg 500K Tap	½					CS-3500	
R2A	Shaft			Not Req.				
B	500K	½	VC-8012	B-59	AD47-500K-S		FA55L	Bass, Channel 2
C	500K	½		SR-59	Not Req.		RU55L	Bass, Channel 1
	Shaft			Not Req.	KSS-3		CS3500	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS (cont)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MUNTZ PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R3A	500K		VC-8013	B-59	AD47-500K-S		FA55L	Treble, Channel 2
B	500K			SR-59	Not Req.		RU55L	Treble, Channel 1
C	Shaft			Not Req.	KSS-3		CS3500	
D	Switch			KR-1	SWE-12		US41	Power Off-On
R4A	500K		VC-8012	B-59	AD47-500K-S		FA55L	Balance, Channel 2
B	500K			SR-59	Not Req.		RU55L	Balance, Channel 1
C	Shaft			Not Req.	KSS-3		CS3500	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	82K	
R6	470K	
R7	220K	
R8	270Ω	
R9	100K	
R10	12K	
R11	100K	
R12	220K	
R13	1000Ω	

ITEM No.	RATING	REMARKS
R14	22K	
R15	120Ω 2W	
R16	82K	
R17	470K	
R18	220K	
R19	270Ω	
R20	100K	
R21	12K	
R22	100K	

ITEM No.	RATING	REMARKS
R23	220K	
R24	1000Ω	
R25	22K	
R26	4700Ω 1W	(1800Ω) *
R27	4700Ω 1W	(1800Ω) *
R28	560Ω 2W	Note 1
R29	560Ω 2W	Note 1

Note 1. When R28 is 280Ω 4W, R29 is not used.
* Alternate Value.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA MUNTZ PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ⓐ .65A	560 VCT ⓐ .9A	6.3V ⓐ 3A	TP-8002	P-3052 ①			24R13 ①	R-110B ②	

① Tape 5V Winding.
② Tape 5V Winding and C. T. on 6V Winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA MUNTZ PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	7000Ω	6-8Ω	TA-8004	A-2901	AU-604	A-3849	24S07	S-53X	
T3	7000Ω	6-8Ω	TA-8004	A-2901	AU-604	A-3849	24S07	S-53X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA MUNTZ PART No.	QUAM PART No.	NOTES
SP1	8"	PM	6-8Ω	SK-0023-3	8A21Z6.8	
SP2	5"	PM	6-8Ω	SK-0033	5A15Z8	
SP3	3½"	PM	4-6Ω	SK-0031	3A15TZ4.4	
SP4	8"	PM	6-8Ω	SK-0023-3	8A21Z6.8	
SP5	5"	PM	6-8Ω	SK-0033	5A15Z8	
SP6	3½"	PM	4-6Ω	SK-0031	3A15TZ4.4	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA MUNTZ PART No. FUSE	MUNTZ PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	3A 250V P/T			318003 (3A 250V P/T)		GJV 3	

PHONO CARTRIDGE

ITEM No.	MUNTZ PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M2		80TS (TB)		96				12TH5	

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	MUNTZ PART No.	JENSEN PART No.	REMARKS
M3	(78 RPM)	CRA-57 † or CRA-57D ♦	† Jewel ♦ Diamond
	(LP)	CRA-57X † or CRA-57XD ♦	

MISCELLANEOUS

ITEM No.	PART NAME	MUNTZ PART No.	NOTES
M4	Motor		Phono Drive

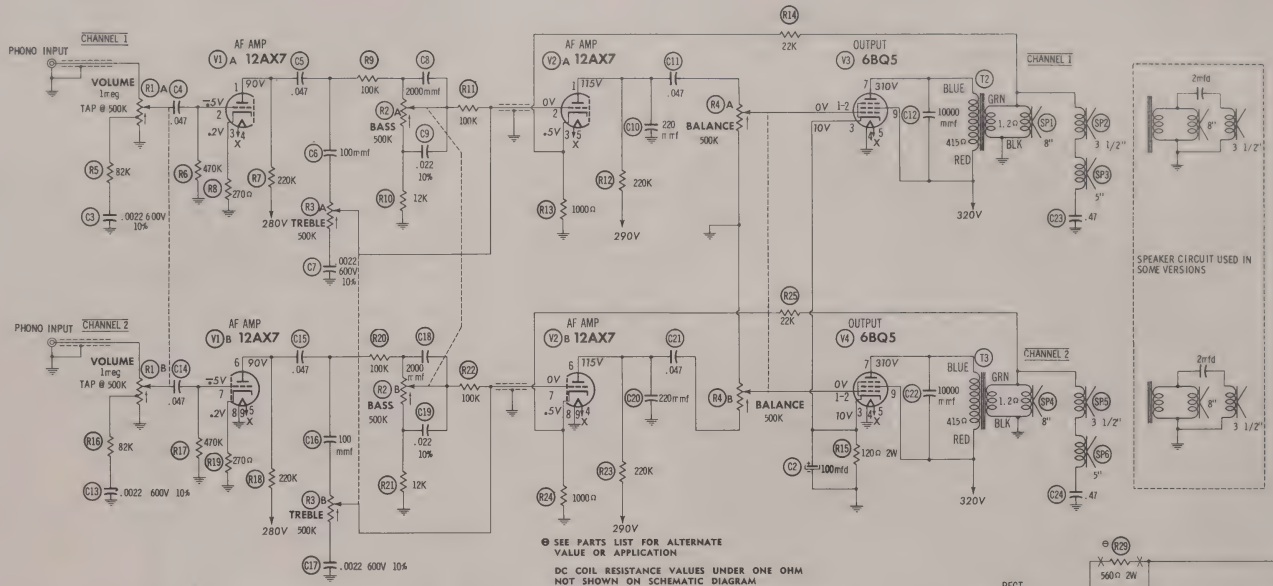
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	KB-8005	Loudness, Bass, Treble, Balance
Cabinet	CW-0108	Walnut
Cabinet	CW-0108-2	Mahogany
Cabinet	CW-0108-4	Blonde
Leg	AS-8015	5" Wood, Mahogany
Leg	AS-8015-1	5" Wood, Black

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†230K	470K	270Ω	.1Ω	.1Ω	†230K	470K	270Ω	0Ω
V2	12AX7	†225K	112K	1000Ω	.1Ω	.1Ω	†225K	112K	1000Ω	0Ω
V3	6BQ5	NC	0Ω	120Ω	0Ω	.1Ω	NC	†600Ω	NC	†280Ω
V4	6BQ5	NC	0Ω	120Ω	0Ω	.1Ω	NC	†600Ω	NC	†280Ω
V5	EZ81 6CA4	65Ω	NC	¶	0Ω	.1Ω	NC	65Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 3 OF V5. NC NO CONNECTION

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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MUNTZ MODELS
815B, M, W

PHOTOFACT® Folder

NORELCO MODEL B5X88A

NORELCO MODEL B5X88A

NORELCO MODEL B5X88A

TRADE NAME	Norelco Model B5X88A		
SUPPLIER	North American Phillips Co., Inc., 230 Duffy Ave., Hicksville, N. Y.		
TYPE SET	AC Operated 9 Tube FM-SW-BC Receiver		
POWER SUPPLY	90/110/127/145/190/220 Volts AC, 50-60 Cycles	RATING	53 Watts, .5 Amp. @117 Volts AC(127V Tap)
TUNING RANGE—BROADCAST	517-1632KC	SHORT WAVE 1	7.3-15.8MC
FREQ. MOD.	88-108MC	SHORT WAVE 2	3.2-7.5MC

SET 501 FOLDER 11

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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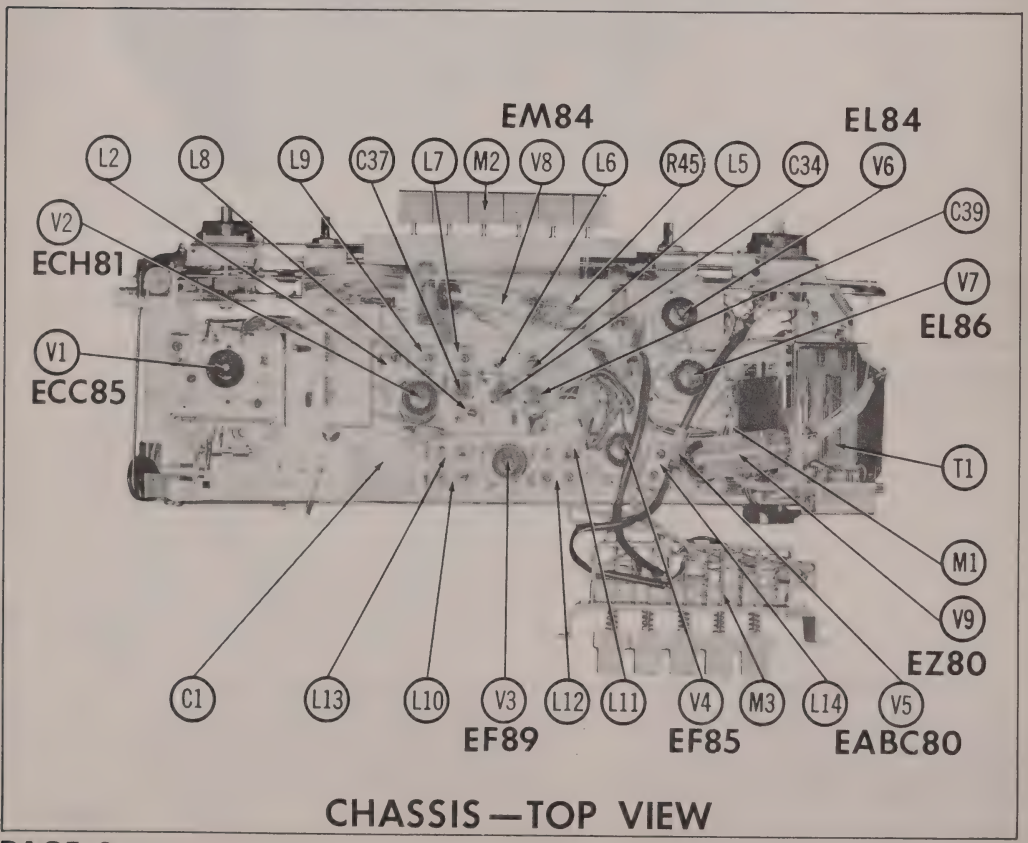
JK951

RESISTANCE MEASUREMENTS

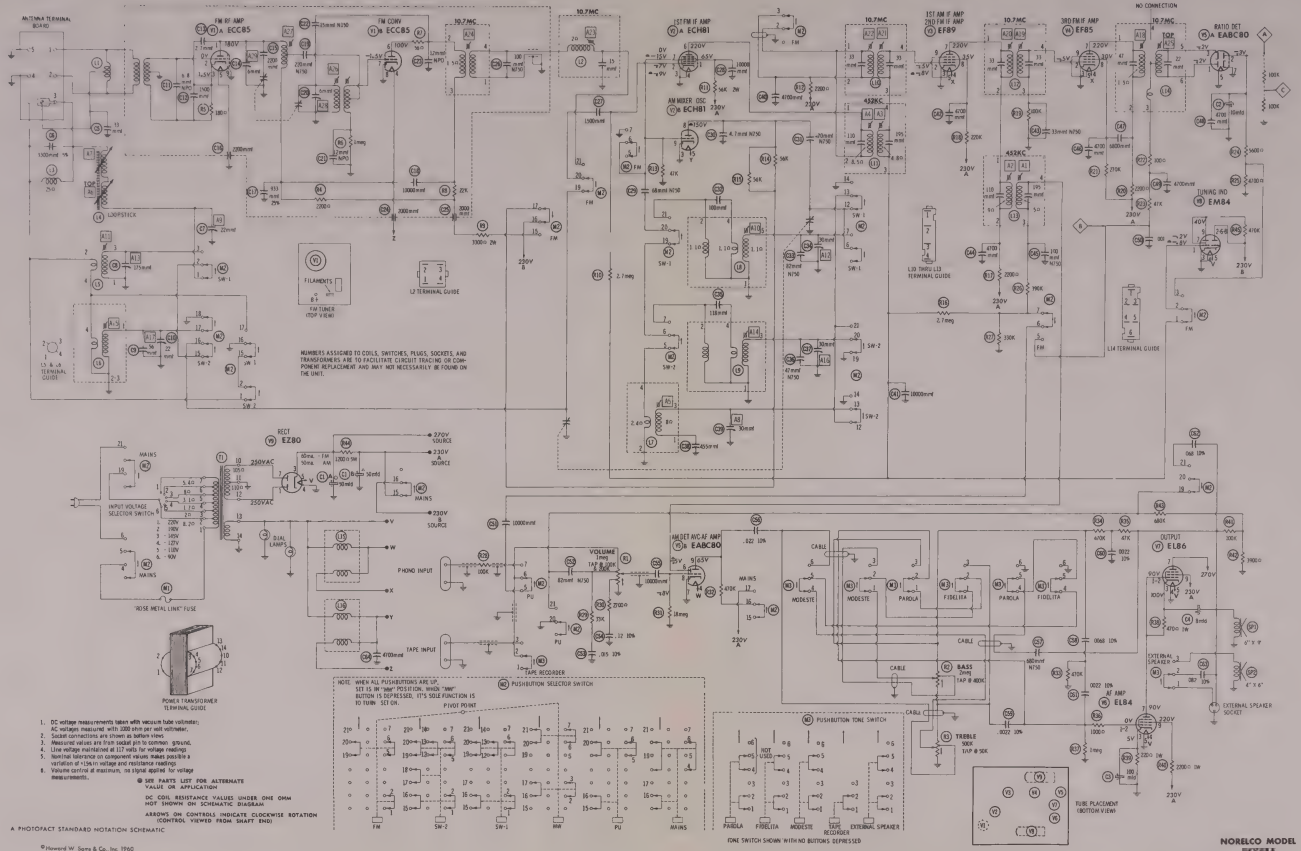
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85	†6700Ω	0Ω	180Ω	.3Ω	0Ω	†26K	1meg	0Ω	0Ω
V2	ECH81	†57K	5.7meg	0Ω	0Ω	.3Ω	†3400Ω	▲47K	▲†3400Ω	▲47K
V3	EF89	0Ω	3meg	0Ω	.3Ω	0Ω	0Ω	†3400Ω	†220K	0Ω
V4	EF85	0Ω	100K	0Ω	.3Ω	0Ω	0Ω	†3400Ω	†270K	0Ω
V5	EABC80	INF	10K	INF	.3Ω	0Ω	720K	0Ω	18meg	†470K
V6	EL84	270K	270K	220Ω	.3Ω	0Ω	NC	¶	NC	†3400Ω
V7	EL86	¶	¶	¶	0Ω	.3Ω	NC	†0Ω	NC	†1200Ω
V8	EM84	3meg	†1200Ω	0Ω	0Ω	.3Ω	†1200Ω	†470K	†1200Ω	†470K
V9	EZ80	110Ω	NC	¶	0Ω	.3Ω	NC	105Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
▲ MEASURED IN "AM" POSITION.
† MEASURED FROM PIN 3 OF V9.

NC NO CONNECTION



CHASSIS—TOP VIEW


ANTENNA TERMINAL BOARD
FM RF AMP V1A ECC85
FM CONV V1B ECC85
10.7MC
1ST FM IF AMP V2A ECH81
AM MIXER OSC V2B ECH81
1ST AM IF AMP 2ND FM IF AMP V3 EF89
10.7MC
AM IF AMP V4 EF85
10.7MC
RATIO DET V5A EABC80
TUNING IND V6 EM84
NO CONNECTION
LOOPSTICK
FILAMENTS V7 6.3 V
FM TUNER (TOP VIEW)
L1 & L2 TERMINAL GUIDE
L3 THRU L13 TERMINAL GUIDE
L14 TERMINAL GUIDE
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
RECT V8 EZ80
INPUT VOLTAGE SELECTION SWITCH
DIAL LAMP
"ROSE METAL LINK" FUSE
POWER TRANSFORMER TERMINAL GUIDE
PHONO INPUT
TAPE INPUT
TAPE RECORDER
VOLUME 1MEG TAPE 500K
AM/1ST AVC-AF AMP V9A EABC80
PUSHBUTTON SELECTOR SWITCH
NOTE: WHEN ALL PUSHBUTTONS ARE UP, SET IS IN "other" POSITION, WHEN "MW" BUTTON IS DEPRESSED, IT'S SOLE FUNCTION IS TO TURN SET ON.
PIVOT POINT
FM
SW-2
SW-1
MW
PU
MAINS
PUSHBUTTON TONE SWITCH
PARDIA
FIDELITA
MODESTE
TAPE RECORDER
EXTERNAL SPEAKER
TONE SWITCH SHOWN WITH NO BUTTONS DEPRESSED
CABLE
MODESTE
PARDIA
FIDELITA
BASS 2MEG TAP @ 400K
TREBLE 500K TAP @ 50K
OUTPUT V9B EL86
AF AMP V10 EL84
EXTERNAL SPEAKER SOCKET
TUBE PLACEMENT (BOTTOM VIEW)
1. DC voltage measurements taken with vacuum tube voltmeter.
2. AC voltages measured with 1000 ohm per volt voltmeter.
3. Socket connections are shown as bottom views.
4. Measured values are from socket pin to common ground.
5. Line voltage maintained at 117 volts for voltage readings.
6. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
8. Volume control at maximum, no signal applied for voltage measurements.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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NORELCO MODEL B5X81A

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1, A2, A3, A4, A28, A29.....	GENERAL CEMENT #8721, 8722 WALSCO #2519
A5, A10, A11, A14, A15, A26, A27...	GENERAL CEMENT #5097, 8727 WALSCO #2515
A9, A17.....	GENERAL CEMENT #5003, 8271, 8275, 8276, 8609, 8721, 8722, 9150, 9298 WALSCO #2516, 2518, 2519
A18 thru A25.....	GENERAL CEMENT #8282, 8606, 8606-L, 9091 WALSCO #2526, 2541, 2542, 2543, 2544

AM ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .033mfd to pin 2 (grid) of AM Converter. Low side to chassis.	452KC (400% Mod.)	(MW-OM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	High side thru .1mfd to AM antenna terminal. Low side to chassis.	550KC	(MW-OM) 550KC	"	A5, A6 A7	"
3.	"	1500KC	(MW-OM) 1500KC	"	A8, A9	"
4.	"	7.5MC	(SW 1) 7.5MC	"	A10, A11	"
5.	"	15.5MC	(SW 1) 15.5MC	"	A12, A13	"
6.	"	3.34MC	(SW 2) 3.34MC	"	A14, A15	"
7.	"	7.4MC	(SW 2) 7.4MC	"	A16, A17	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

Connect two matched 100K (± 1%) resistors in series from point (A) to chassis. The junction of these two resistors is alignment point (C) as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	High side thru 1500mmf to FM antenna terminal. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point (A). Common to chassis.	A18, A19, A20, A21, A22, A23, A24	Adjust for maximum deflection.
9.	"	"	"	DC probe to point (B). Common to Point (C).	A25	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
8.	High side thru 1500mmf to FM antenna terminal. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point (A). Low side to chassis.	A18, A19, A20, A21, A22, A23, A24	Disconnect stabilizing Capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C2.
9.	"	"	"	Vert. amp. to point (B). Low side to chassis.	A25	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A18 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
10.	High side thru 270Ω to FM antenna terminal. Low side to chassis.	87.5MC (Unmod.)	(FM) Tuning gang fully closed.	DC probe to point (A). Common to chassis.	A26, A27	Adjust for maximum deflection.
11.	"	100MC	100MC	"	A28, A29	"

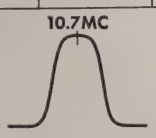


FIG. 1

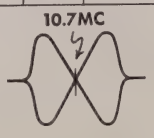
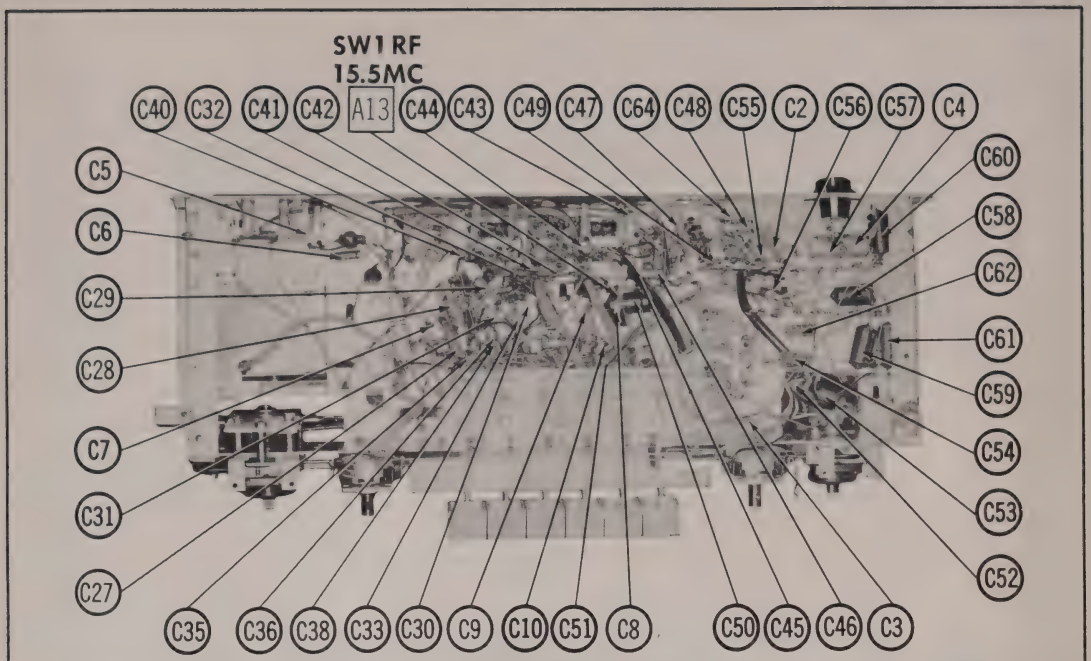
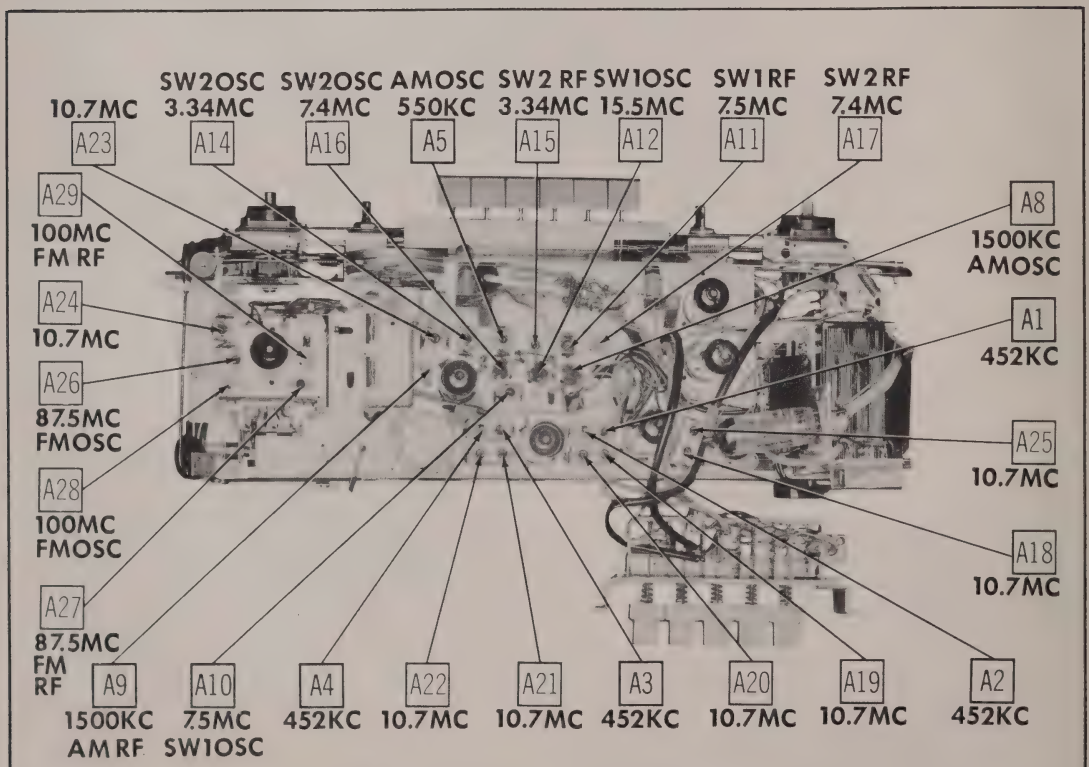


FIG. 2



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CHASSIS TOP VIEW--ALIGNMENT

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp.-FM Conv.	ECC85	V5	Ratio Det.-AM Det.-AVC-AF Amp.	EABC80
V2	1st FM IF Amplifier-AM Mixer-AM Osc.	ECH81	V6	AF Amplifier	EL84
V3	2nd FM-1st AM IF Amp.	EF89	V7	Output	EL86
V4	3rd FM IF Amplifier	EF85	V8	Tuning Indicator	EM84
			V9	Rectifier	EZ80

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	NORELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲50	350	913/P50+50					TVLS-2646*	
B	▲50	350							
C2	10	70	909/E10	SRE70V10	NLW10-100	TT150X10	TD-10-150	TE-1407	
C3	100	12.5	909/B100	SRE15V100	BBR100-25	TT15X100	ML100-15	TE-1162	
C4	8	300	911/L8	PRS1610	BR835	TC61	TD-8-350	TVA-1603	

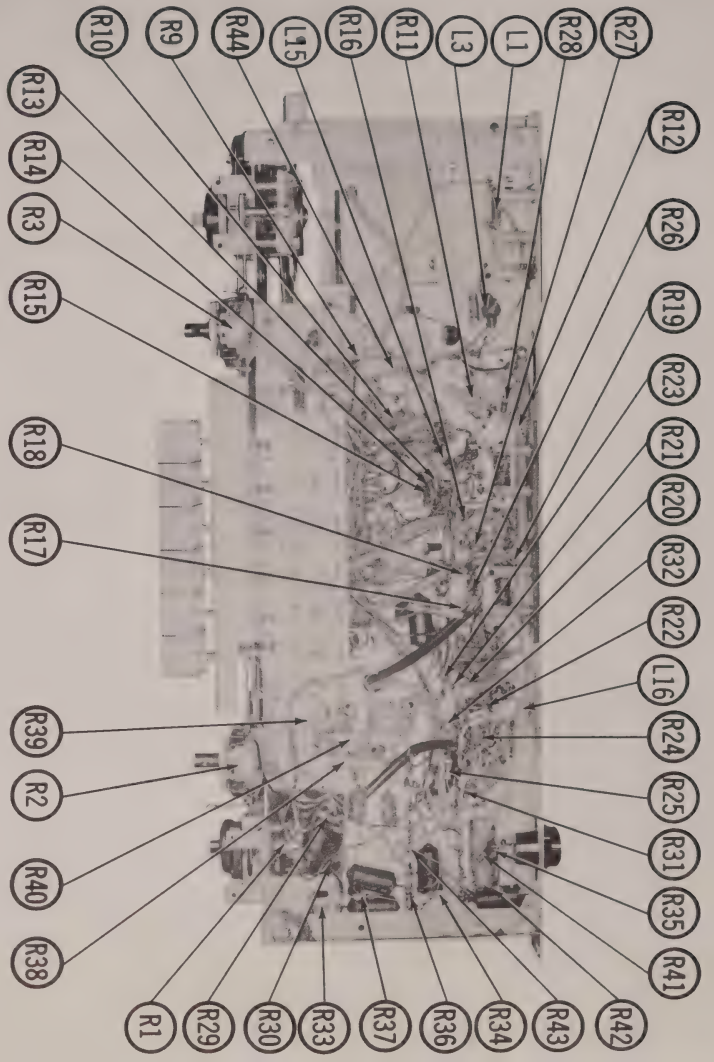
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	33		SI 33	D6-330	L10Q33	CCD-330	GP433	10TS-Q33
C6	3300 5%				1R5D33	CM-20B-332J	MCJ462	MS-233
C7	22							
C8	175							
C9	56		SI 56	D6-560	L10Q56	CCD-560	GP456	10TS-Q56
C10	22							
C11	6.8 NPO		NPO-SI 6.8	TCZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C12	1500		SI 1500	D6-152	BYA10D15	CCD-152	B-215	5HK-D15
C13	2.7		NPO-DI 3.0		C10V3C			10TCC-V27
C14	6							
C15	2200		SI 2200	D6-222	BYA10D22	CCD-222	B-222	5HK-D22
C16	2200							
C17	933 25%			DD-102	1R5D1	CCD-102	GP210	10TS-D10
C18	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C19	220 N750		N750-SI 220	TCN-220	C10T22U	CCTN-221	CN7-422	10TCU-T22
C20	6							
C21	12 NPO		NPO-SI 12	TCZ-12	C10Q12C	CCTO-120	CNO-412	10TCC-Q12
C22	15 N150					*		10TCP-Q15
C23	12 NPO		NPO-SI 12	TCZ-12	C10Q12C	CCTO-120	CNO-412	10TCC-Q12
C24	2000							
C25	2000							
C26	100 N750		N750-SI 100	TCN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C27	1500		SI 1500	D6-152	BYA10D15	CCD-152	B-215	5HK-D15
C28	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	68 N750		N750-SI 68	TCN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C30	4.7 N750		N750-SI 4.7	TCN-4R7	C10V5C	CCTN-050	CN7-547	10TCU-V50
C31	470 N750		N750-SI 470	TCN-470				10TCU-T47
C32	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C33	82 N750		N750-SI 82	TCN-82	C10Q82U	CCTN-820	CN7-482	10TCU-Q82
C34	30							
C35	118		SI 120	D6-121	L10T12	CCD-121	GP312	10TS-T12
C36	47 N750		N750-SI 47	TCN-47	C10Q47C	CCTN-470	CN7-447	10TCU-Q47
C37	30							
C38	455							
C39	30							
C40	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C41	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C42	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C43	33 N750		N750-SI 33	TCN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C44	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C45	100 N750		N750-SI 100	TCN-100	C10TUU	CCTN-100	CN7-310	10TCU-T10
C46	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C47	6800		SI 6800	D6-682	BYA10D68	CCD-682	B-268	5HK-D68
C48	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C49	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C50	.001 400V		P488N-001	D6-102	CUB6D1	6DP-1-102	GEM-421	6TM-D1
C51	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C52	82 N750		N750-SI 82	TCN-82	C10Q82U	CCTN-820	CN7-482	10TCU-Q82
C53	.015 125V 10%		V84C2S15-10%		PM4S15	4DP-1-153		4TM-S15
C54	.12 125V 10%		V84C2P1-10%		PM2P1	4DP-3-104	GEM-201	6TM-D1
C55	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C56	.022 400V 10%		V84C4S22-10%		PM4S22	4DP-2-223	GEM-16122	4TM-S22
C57	680 N750		N750-SI 680	TCN-680				10TCU-T68
C58	.0068 400V 10%		V84C4D68-10%		PM6D68	6DP-1-682	GEM-16268	6TM-D68
C59	.0022 400V 10%		V84C4D22-10%		PM6D22	6DP-1-222	GEM-16222	6TM-D22
C60	.0022 400V 10%		V84C4D22-10%		PM6D22	6DP-1-222	GEM-16222	6TM-D22
C61	.0022 400V 10%		V84C4D22-10%		PM6D22	6DP-1-222	GEM-16222	6TM-D22
C62	.068 125V 10%		V84C2S68-10%		PM4S68	4DP-3-683		4TM-S68
C63	.082 400V 10%				DPMS6S82	6DP-4-823		
C64	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47

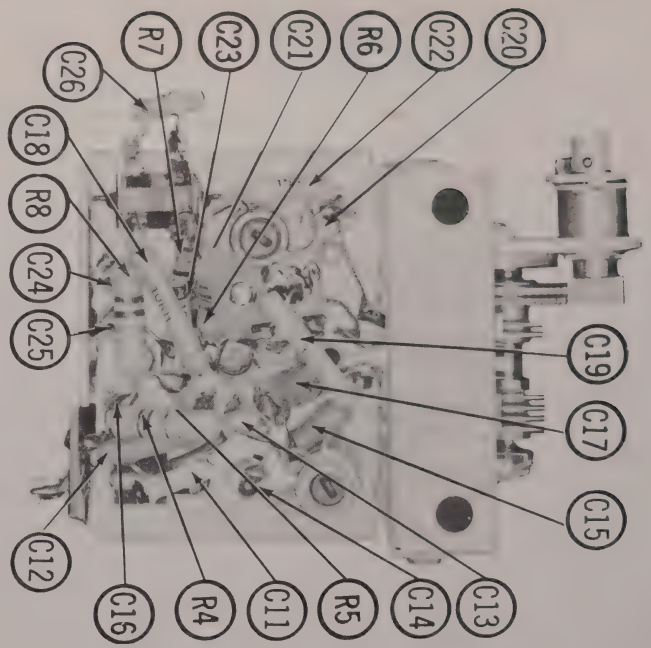
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	NORELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	1meg *	1/2	Bl 639 53					Volume
R2	2meg 400K Tap	1/2	Bl 639 48					Bass
R3	500K 50K Tap	1/2	Bl 639 49					Treble

* Taps@100K and 200K.

FM RF SUBCHASSIS



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	2200Ω	
R5	180Ω	
R6	1meg	
R7	56Ω	
R8	22K	
R9	3300Ω 2W	
R10	2.7meg	
R11	56K 2W	
R12	2200Ω	
R13	47K	
R14	56K	
R15	56K	
R16	2.7meg	
R17	2200Ω	

ITEM No.	RATING	REMARKS
R18	220K	
R19	100K	
R20	2200Ω	
R21	270K	
R22	100Ω	
R23	47K	
R24	5600Ω	
R25	4700Ω	
R26	390K	
R27	330K	
R28	100K	
R29	33K	
R30	2700Ω	
R31	18meg	

ITEM No.	RATING	REMARKS
R32	470K	
R33	470K	
R34	470K	
R35	47K	
R36	1000Ω	
R37	1meg	
R38	470Ω 1W	
R39	220Ω 1W	
R40	2200Ω 1W	
R41	100K	
R42	3900Ω	
R43	680K	
R44	1200Ω 5W	IRC#PW5 1200Ω
R45	470K	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	NORELCO PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	220V Tap @190V* 145V,127V* 110V, 90V	500VCT @.060A	6.3V@ 3.4A	919/290X110 (A314316.0)						

* .5A@117 Volts using 127V tap.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	NORELCO PART No.	QUAM PART No.	
SP1	6"x 9"	PM	640-660Ω	AD3690AM		
SP2	4"x 6"	PM	580-600Ω	AD2460A		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		NORELCO PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Trans.	WE 110 61				
L2	2nd FM IF Trans.	A3 127 63				
L3	RF Choke	A3 803 61				
L4	Loopstick	922/01				
L5	Sw. I Ant. Trans.	921/11-20M				
L6	Sw. II Ant. Trans.	921/30-90M				
L7	MW BC Osc. Coil	923U/185-590M				
L8	Sw. I Osc. Coil	923/10-20M				
L9	Sw. II Osc. Coil	A3 127 32				
L10	3rd FM IF Trans.	926/10.7				
L11	1st AM IF Trans.	925/452				
L12	4th FM IF Trans.	926/10.7				
L13	2nd AM IF Trans.	925/452				
L14	Ratio Det.	926/10.7RD				
L15	Fil. Choke					
L16	Fil. Choke					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			NORELCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	Rose Metal Link							

MISCELLANEOUS

ITEM No.	PART NAME	NORELCO PART No.	NOTES
M2	Switch		Function Selector (Pushbutton Type) Includes Six Pushbuttons; Off-Phono-AM-SW 1 - SW 2 & FM
M3	Switch		Tone Control (Pushbutton Type) includes five Pushbuttons; Extension Spkr. - Tape Rec. -Pleasant — Hi Fi - Speech.

PARTS LIST AND DESCRIPTIONS (Continued)

CABINETS & CABINET PARTS

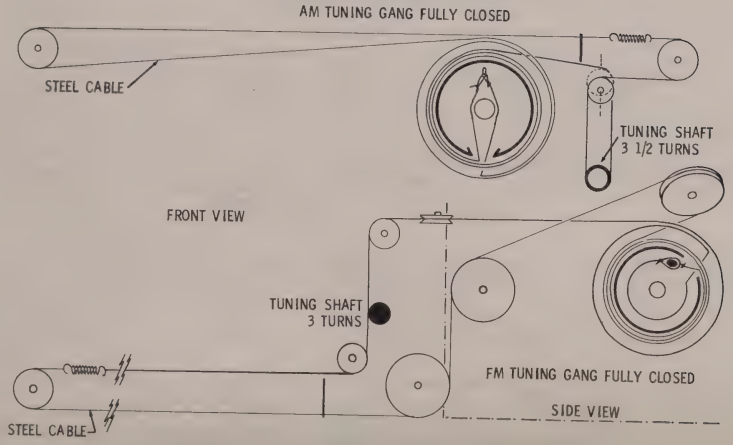
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial	A392769	
Dial	A392772	Overseas
Knob	A377274	Tuning, Volume
Knob	P407765/417	Bass, Treble
Pushbutton	P542026/139	On-Off, P. U., M. W., SW1, SW2, FM
Pushbutton	P542023/139	Ext. Speaker, Tape, Modeste, Fidelita, Parola
Cabinet	A300669	
Cabinet Front	A368685	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors
		8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length)
		1725-K (7½ Ft. Length)

DIAL CORD STRINGING



PHOTOFACT® Folder

OLYMPIC MODELS SE822P, SE823, 7501, 7502, 7511 (Ch. 150, 151)

OLYMPIC MODELS SE822P, SE823, 7501, 7502, 7511 (Ch. 150, 151)

MODEL 7511

OLYMPIC MODELS SE822P, SE823, 7501, 7502, 7511 (Ch. 150, 151)

TRADE NAME	Olympic Models 7501, 7502 (Ch. 150); 7511 (Ch. 151); SE822P, SE823 (Auxiliary Speaker Unit)		
MANUFACTURER	Olympic, A Div. of The Siegler Corp., 34-01 38th Ave., Long Island City 1, N. Y.		
TYPE SET	AC Operated 11 Tube FM-AM Receiver With Stereo Output And 4 Speed Automatic Record Changer		
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles	RATING	110 Watts, .9 Amp. @117 Volts AC (Less Motor)
TUNING RANGE—BROADCAST	535 — 1620KC	FREQ. MOD.	88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER PART #RX26202 — SEE MONARCH UA12 — PHOTOFACT SET 465 FOLDER 6

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

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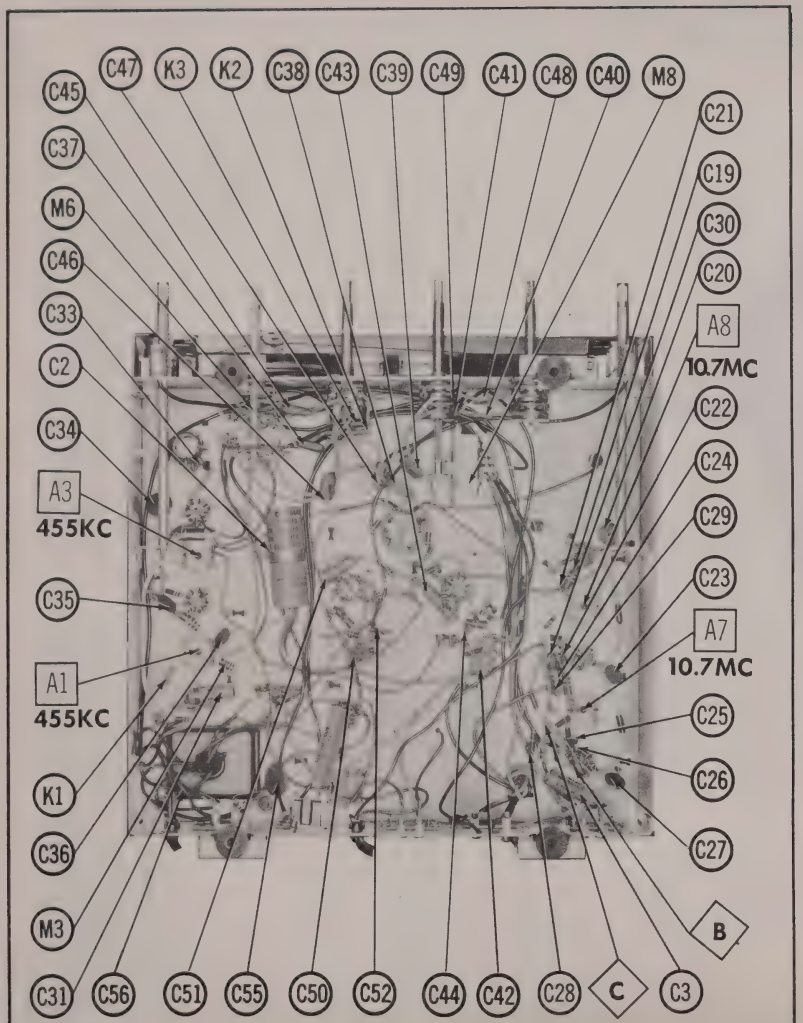
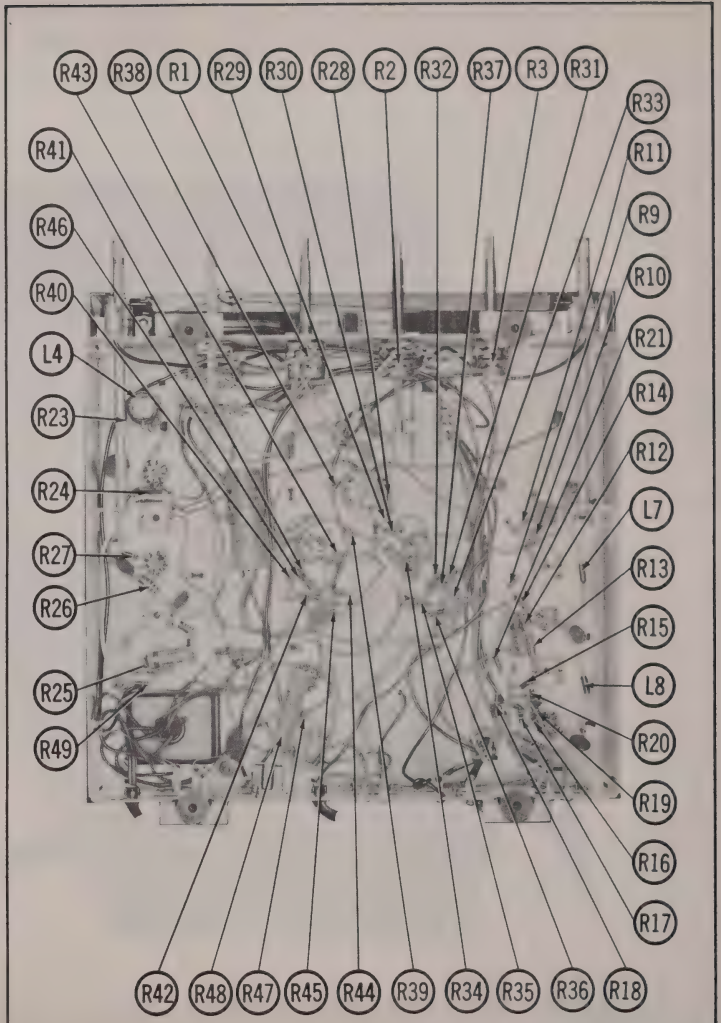
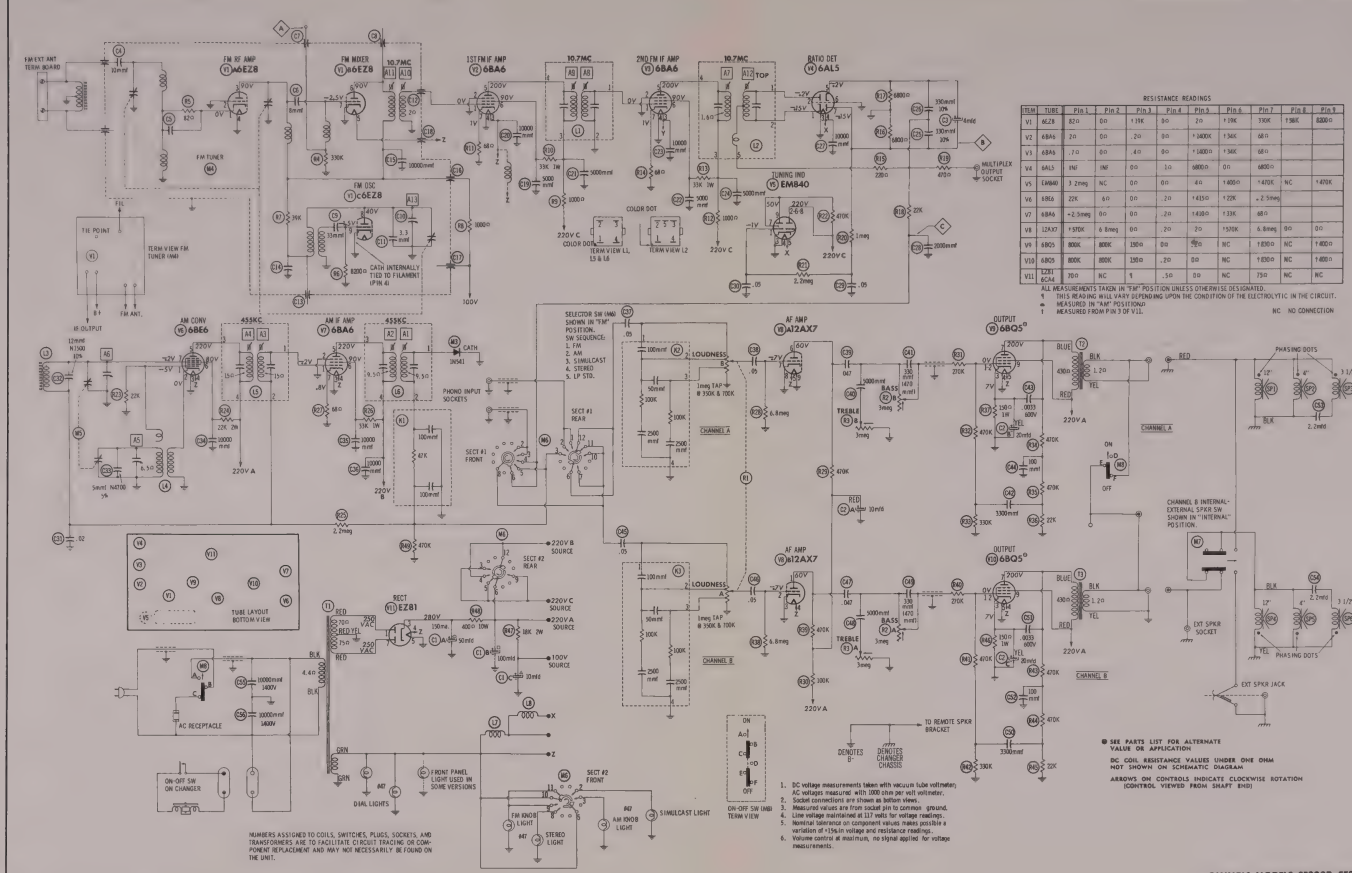


CHASSIS BOTTOM VIEW – CAP, MISC. & ALIGN. IDENT.



CHASSIS BOTTOM VIEW – RESISTOR IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CZ8	82Ω	0Ω	↑1MΩ	0Ω	2Ω	↑39K	330K	↑88K	820Ω¶
V2	6BA6	2Ω	0Ω	.2Ω	0Ω	↑340ΩK	↑34K	68Ω		
V3	6BA6	.7Ω	0Ω	.4Ω	0Ω	↑340ΩK	↑34K	68Ω		
V4	6AL5	INF	INF	0Ω	.1Ω	680Ω	0Ω	680Ω		
V5	EM840	3.2meg	NC	0Ω	0Ω	4Ω	↑480Ω	↑470K	NC	↑470K
V6	6BE6	22K	6Ω	0Ω	.2Ω	↑415Ω	↑22K	↑2.5meg		
V7	6BA6	↑2.5meg	0Ω	0Ω	.2Ω	↑340Ω	↑33K	68Ω		
V8	12AX7	↑570K	6.8meg	0Ω	.2Ω	2Ω	↑570K	6.8meg	0Ω	0Ω
V9	6BQ5	800K	800K	135Ω	0Ω	5Ω	NC	↑135Ω	NC	↑400Ω
V10	6BQ5	800K	800K	135Ω	.2Ω	0Ω	NC	↑135Ω	NC	↑400Ω
V11	12BH 6CA4	700	NC	1	.5Ω	0Ω	NC	75Ω	NC	NC

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
↑ MEASURED IN "FM" POSITION
↑ MEASURED FROM PIN 3 OF V11.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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OLYMPIC MODELS SE822P, SE823, 7501, 7502, 7511 (Ch. 150, 151)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4, A8, A9... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6, A13..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A7, A12..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A10, A11..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

AM ALIGNMENT—SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC 400∿	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1500KC	1500KC	"	A5, A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
3.	High side thru .001mfd to point Ⓐ. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓑ. Common to chassis.	A7, A8, A9, A10, A11	Adjust for maximum deflection.
4.	"	"	"	DC probe to point Ⓒ. Common to chassis.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
3.	High side thru .001mfd to point Ⓐ. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. Amp. to point Ⓑ. Low side to chassis.	A7, A8, A9, A10, A11	Disconnect stabilizing Capacitor C3. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C3.
4.	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A12	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	Across FM antenna terminals with 120Ω in each lead.	108MC (Unmod.)	(FM) 108MC	DC probe to point Ⓑ. Common to chassis.	A13	If necessary, adjust for maximum deflection. If more than 1/2 turn is required substitute FM Mixer - Oscillator tube (V1).

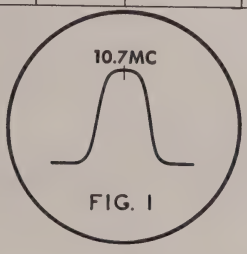


FIG. 1

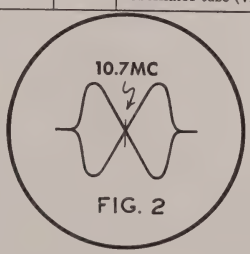


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	FM RF Amplifier-FM Mixer - Osc.	6EZ8
V2	1st FM IF Amplifier	6BA6
V3	2nd FM IF Amplifier	6BA6
V4	Ratio Detector	6AL5
V5	Tuning Indicator	EM840
V6	AM Converter	6BE6
V7	AM IF Amplifier	6BA6
V8	Channel A AF Amp. - Channel B AF Amp.	12AX7
V9	Channel A Output	6BQ5 (EL84) *
V10	Channel B Output	6BQ5 (EL84) *
V11	Rectifier	EZ81/6CA4

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA OLYMPIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲50	400	CO26186	AFH3-45-10	C0239.2	FP396.2	TMD-55	TVLS-2781*	
B	■100	400		PRS1790	BR5045	TC805	TD-100-450	TVA-1705	
C	▲10	400							
C2A	10	450	CO26609	PRS2165	BBRT2245C	TCD45	TDLT-21	TVA-4712	
B	20	40		PRS1720		TC72			
C	20	40							
C3	4	50	CO2756	PRS1400	BBR4-50	TT50X4	TD-4-50	TVA-1402	

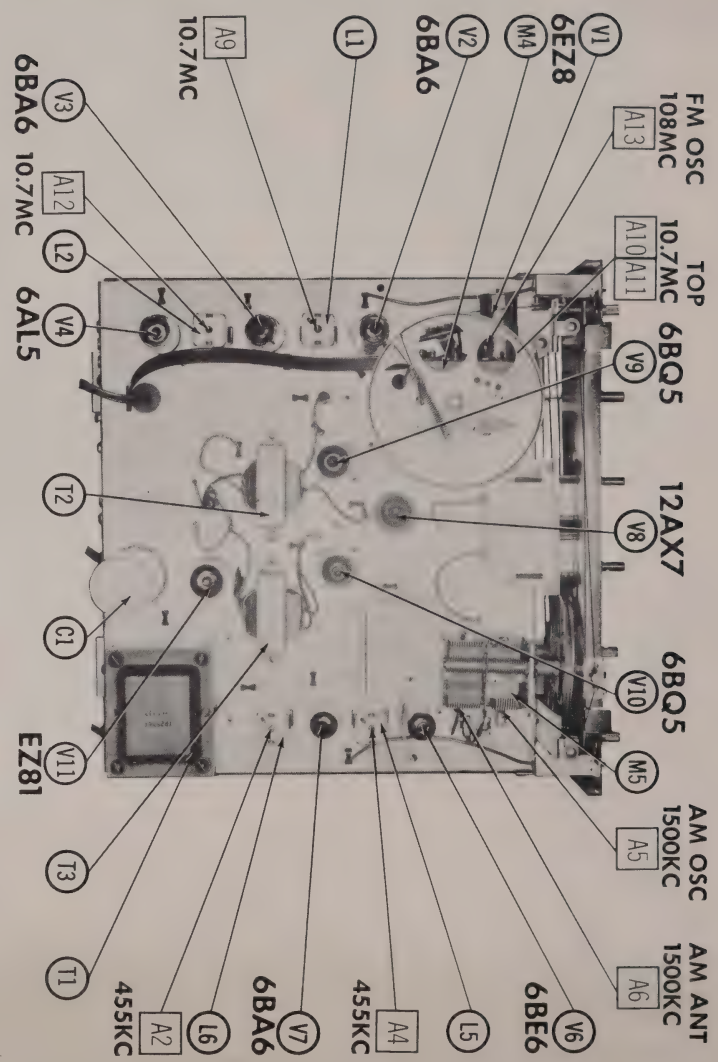
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C5								
C6	8		NPO-DI 8.2		C10V8C			10TCC-V82
C7								
C8								
C9	33		NPO-DI 33	DTZ-33	C10Q33C	CCTO-33	CNO-433	10TCC-Q33
C10								
C11	3.3		NPO-DI 3.3	DTZ-3R3	C10V3.3C	CCTO-3R3	CNO-533	10TCC-V33
C12								
C13								
C14								
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	10TS-S10
C16								
C17								
C18								
C19	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C22	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C25	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C26	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C29	.05 50V		P288N-05	DD-503	CUB2S5	1DP-2-503	GEM-415	2TM-S5
C30	.05 50V		P288N-05	DD-503	CUB2S5	1DP-2-503	GEM-415	2TM-S5
C31	.02 400V		P488N-02	DD-203	CUB4S5	4DP-2-203	GEM-412	4TM-S20
C32	12 N1500 10%					*		
C33	5 N4700 5%	#CCR050K				*		
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C37	.05 50V		P288N-05	DD-503	CUB2S5	1DP-2-503	GEM-415	2TM-S5
C38	.05 50V		P288N-05	DD-503	CUB2S5	1DP-2-503	GEM-415	2TM-S5

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C39	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C40	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C41	330	(470) †	DI-330	DD-331	L10T33	CCD-331	B-333	10TS-T33
C42	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C43	.0033 600V		P688N-0033	D6-332	CUB6D33	6DP-1-332	GEM-6233	6TM-D33
C44	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C45	.05 50V		P288N-05	DD-503	CUB2S5	1DP-2-503	GEM-415	2TM-S5
C46	.05 50V		P288N-05	DD-503	CUB2S5	1DP-2-503	GEM-415	2TM-S5
C47	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C48	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C49	330	(470) †	DI-330	DD-331	L10T33	CCD-331	B-333	10TS-T33
C50	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C51	.0033 600V		P688N-0033	D6-332	CUB6D33	6DP-1-332	GEM-6233	6TM-D33
C52	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C53	2, 2mfd 3V	#CO25691		UK-225				
C54	2, 2mfd 3V	#CO25691		UK-225				
C55	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	2HV-110	BL-S10
C56	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	2HV-110	BL-S10

Olympic Part Number.
† Alternate Value.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	OLYMPIC PART No.	REPLACEMENT DATA	
K1	AM Diode RF Filter	100mmf, 100mmf, 47K	PC2478-1	Aerovox	PA-98
				Centralab	PC-51
				Cornell-Dubilier	111TM2
				Sprague	D-2
K2	Loudness Comp.	50mmf, 100mmf, 2500mmf, 2500mmf, 100K, 100K	PC25420	Centralab	PC-325
				Sprague	TC-5
K3	Loudness Comp.	50mmf, 100mmf, 2500mmf, 2500mmf, 100K, 100K	PC25420	Centralab	PC-325
				Sprague	TC-5

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: OLYMPIC PART No.	Merit PART No.	Ram PART No.	NOTES
L1	2nd FM IF Trans.	TR26714	FM-254	1463	
L2	Ratio Det.	TR1646	FM-255	1465	
L3	Loopstick	LP26604	BC-419	705-A	
L4	AM Osc. Coil	CL2709	BC-393	69-OSC	
L5	1st AM IF Trans.	TR1644	BC-352	12-C1	RF-1
L6	2nd AM IF Trans.	TR1645	BC-353	12-C2	RF-2
L7	Fil. Choke	CK2445	BC-563	4606	2.2uh
L8	Fil. Choke	CK2445	BC-563	4606	2.2uh

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg *	1/2	PT25963					Loudness, Channel B
B	1meg *	1/2						Loudness, Channel A
R2A	3meg	1/2	PT26645					Bass, Channel B
B	3meg	1/2						Bass, Channel A
R3A	3meg	1/2	PT26447	F1-79		† QJ-1279R	▲	Treble, Channel B
B	3meg	1/2		R2-79				Treble, Channel A

† "Concentrikit" equivalent: K-6 Kit with base elements & shafts: B13-140, P13-128 (Panel)
Not available as a factory assembled unit. B13-140, R1-209 (Rear)
▲ "STA-LOC" equivalent: FC36A, RU36A, CS1875A, IS2375.
* Taps @ 350K & 700K.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: OLYMPIC PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V @ .9A	500 VCT @ .150A	6.3V @ 5.6A	TR25747						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: OLYMPIC PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	3600Ω	2-3Ω	TR25922E	A-2901	AU-604	A-3849	24S06	S-53X	
T3	3600Ω	2-3Ω	TR25922E	A-2901	AU-604	A-3849	24S06	S-53X	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	330K	
R5	82Ω	
R6	8200Ω	
R7	39K	
R8	1000Ω	
R9	1000Ω	
R10	33K 1W	
R11	68Ω	
R12	1000Ω	
R13	33K 1W	
R14	68Ω	
R15	220Ω	
R16	6800Ω	
R17	6800Ω	
R18	22K	
R19	470Ω	

ITEM No.	RATING	REMARKS
R20	1meg	
R21	2.2meg	
R22	470K	
R23	22K	
R24	22K 2W	
R25	2.2meg	
R26	33K 1W	
R27	68Ω	
R28	6.8meg	
R29	470K	
R30	100K	
R31	270K	
R32	470K	
R33	330K	
R34	470K	
R35	470K	

ITEM No.	RATING	REMARKS
R36	22K	
R37	150Ω 1W	
R38	6.8meg	
R39	470K	
R40	270K	
R41	470K	
R42	330K	
R43	470K	
R44	470K	
R45	22K	
R46	150Ω 1W	
R47	18K 2W	
R48	400Ω 10W	IRC#PW10 400Ω
R49	470K	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: OLYMPIC PART No.	QUAM PART No.	NOTES
SP1	12"	PM	3-4Ω	SK26303 †	12A6A	† Model 7511
SP2	4"	PM	14-16Ω	SK26302 †	4A07RZ15.7	* Models 7501, 7502
SP3	3½"	PM	3-4Ω	SK26301 †	3A15T	♦ Models SE822P, SE823
SP4	12"	PM	3-4Ω	SK26303 †	12A6A	
SP5	4"	PM	14-16Ω	SK26302 †	4A07RZ15.7	
SP6	3½"	PM	3-4Ω	SK26301 †	3A15T	
	8"	PM	3-4Ω	SK1906 * ♦	8A31	
	3½"	PM	3-4Ω	SK4076-2 *	3A15T	
	3½"	PM	3-4Ω	SK25463 *	3A15T	
	4"	PM	3-4Ω	SK4243 ♦	4A07R	

PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							
	OLYMPIC PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M1		76TS-TB		96				12TH-S	

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA		REMARKS
	OLYMPIC PART No.	JENSEN PART No.	
M2	(78 RPM)	CRA-57 † or CRA-57D ♦ and	† Jewel ♦ Diamond
	(LP)	CRA-57X † or CRA-57XD ♦	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		OLYMPIC PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M3	1N541	1N541	1N636	1N295	1N295	AM Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M4	Tuner	CL26657	FM, Complete
M5	Tuning Cap.	CV26567	AM, 2 Gang (Ant. 24-540mmf, Osc. 21-187mmf)
M6	Switch	SW26644	Band (Rotary Wafer Type)
M7	Switch		Speaker (DPDT, Slide Type)
M8	Switch	SW26709	Off-On (Slide Type)

CABINETS & CABINET PARTS

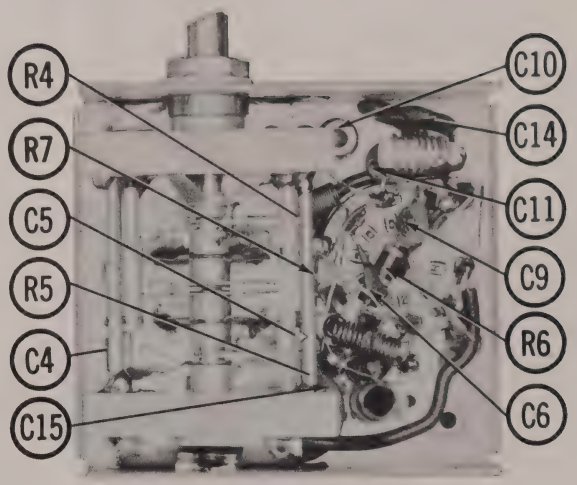
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	KN26755	Tuning
Knob	KN26757	Loudness, Bass, Treble, Channel B
Knob	KN26765	Loudness, Bass, Treble, Channel A
Knob	KN26756	Selector, Function
Cabinet	CA26103	Model 7502
Cabinet	CA26345	Model 7511
Cabinet	CA26556	Model 7501
Cabinet	CA26751	Speaker, Model SE822P
Cabinet	CA26813	Speaker, Model SE823

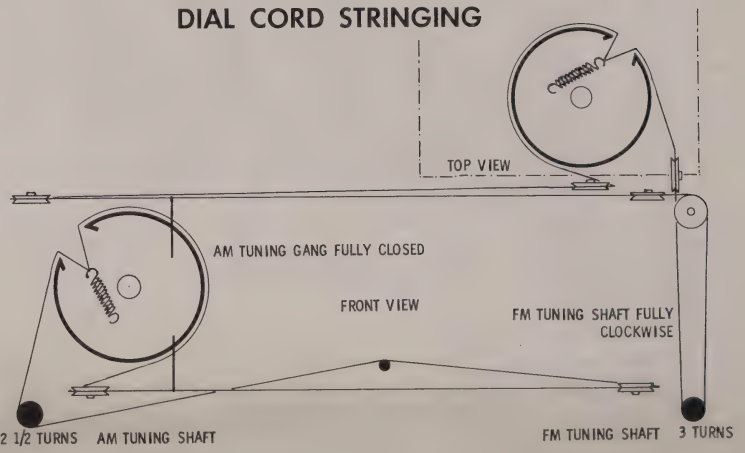
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)

FM RF SUBCHASSIS



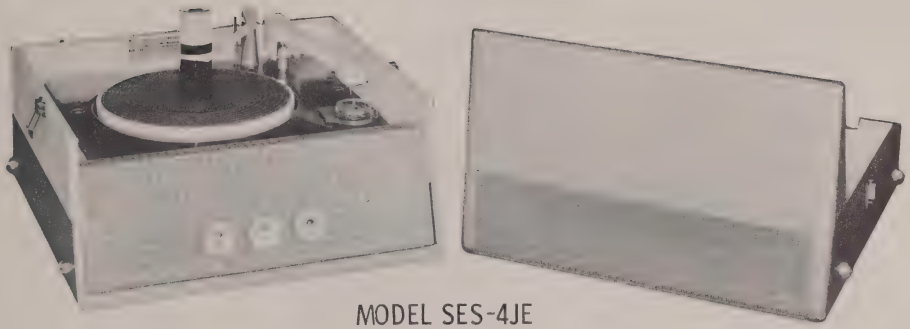
DIAL CORD STRINGING



PHOTOFACT® Folder

RCA VICTOR MODELS
SES-3JH, -3K, -4JE (Ch. RS-184, A)

RCA VICTOR MODELS
SES-3JH, -3K, -4JE (Ch. RS-184, A)



MODEL SES-4JE

RCA VICTOR MODELS
SES-3JH, -3K, -4JE (Ch. RS-184, A)

TRADE NAME	RCA Victor Models SES-3JH, SES-3K (Ch. RS-184A), SES-4JE (Ch. RS-184)
MANUFACTURER	RCA Vicotor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N. J.
TYPE SET	AC Operated 3 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 35 Watts, .38 Amp. @117 Volts AC (Less Motor)

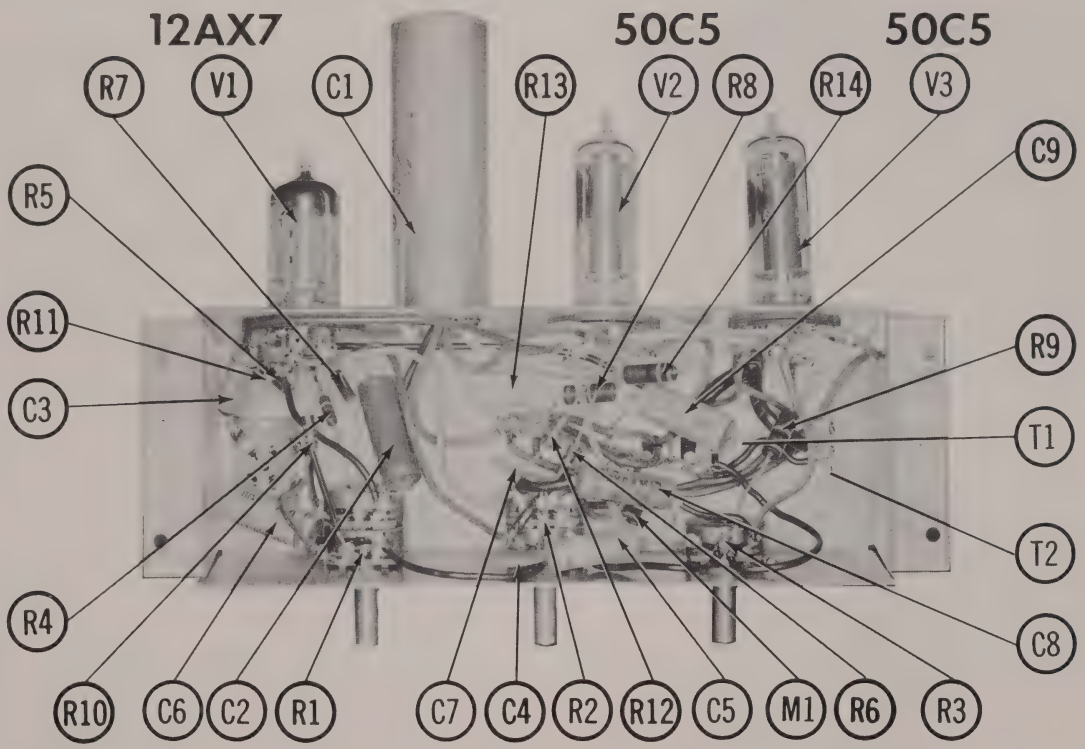
FOR SERVICE INFORMATION ON RECORD CHANGER — SEE RCA RP-212-2 — PHOTOFACT SET 475 FOLDER 7

SET 501 FOLDER 13

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JT980



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC •		RAYTHEON •	SYLVANIA •	
V1	Left Channel AF Amp. - Right Channel AF Amp.	12AX7	V2 V3	Left Channel Output Right Channel Output	50C5 50C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	RCA VICTOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	80	200	108782	PR3-125	BBRD8515	WT407	TDLD-22	TVA-2450	
B	50	150			BR3015		TD-80-350	TVA-1716	
C	30	12							
C2	25	6	214306	PRS1260	BBR25-6	TC26	TD-25-25	TVA-1205	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C4	4700	Note 1	BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C5	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C6	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C7	4700	Note 1	BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C8	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C9	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

Note 1. Not used in Ch. RS-184A.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	RCA VICTOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	1/2	108711	B-76	AD47-2meg-Z		FA26A	Loudness, Right Channel
B	2meg	1/2		SR-76	Not Req.		RU26A	Loudness, Left Channel
C	Shaft			Not Req.	FS-3		CS3500	
R2A	2meg	1/2	108717	B-76	AD47-2meg-Z		FA26A	Tone, Left Channel ①
B	2meg	1/2		SR-76	Not Req.		RU26A	Tone, Right Channel ①
C	Shaft			Not Req.	FS-3		CS3500	
R3A	500K	1/2	108712	B-59	A47-500K-S	Q11-133	U50	Balance
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

① Not used in Chassis RS-184A.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	220K	
R5	1.5meg	
R6	220K	
R7	3300Ω	

ITEM No.	RATING	REMARKS
R8	1200Ω 1W	
R9	82Ω 1W	
R10	56K	
R11	330K	

ITEM No.	RATING	REMARKS
R12	220K	
R13	33Ω 7W ①	IRC #PW7 33Ω
R14	33Ω 1W ①	

① Not used in later versions of Model SES-3 Series and SES-4JE.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	RCA VICTOR PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2200Ω Tap ⓐ 5%	1-2Ω	108710 ①				24S87		
T2	2200Ω Tap ⓐ 5%	1-2Ω	108710 ①				24S87		

① Part #79283 (3-4Ω Sec.) used in Chassis RS-184A.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	RCA VICTOR PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	79696A *	4A1	* Not used in Chassis RS-184A
SP2	4"	PM	3-4Ω	79696A	4A1	
SP3	4"	PM	3-4Ω	79696A *	4A1	
SP4	4"	PM	3-4Ω	79696A	4A1	

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	RCA VICTOR PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.080A	108680 *	RE504 *	1N1763 *	F4 *	SR200 *	* Silicon Type

PHONO CARTRIDGE

ITEM No.	RCA VICTOR PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M2	108213A	13TB		26S					

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	RCA VICTOR PART No.	JENSEN PART No.	† REMARKS
M3	108214 †		† Jewel

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

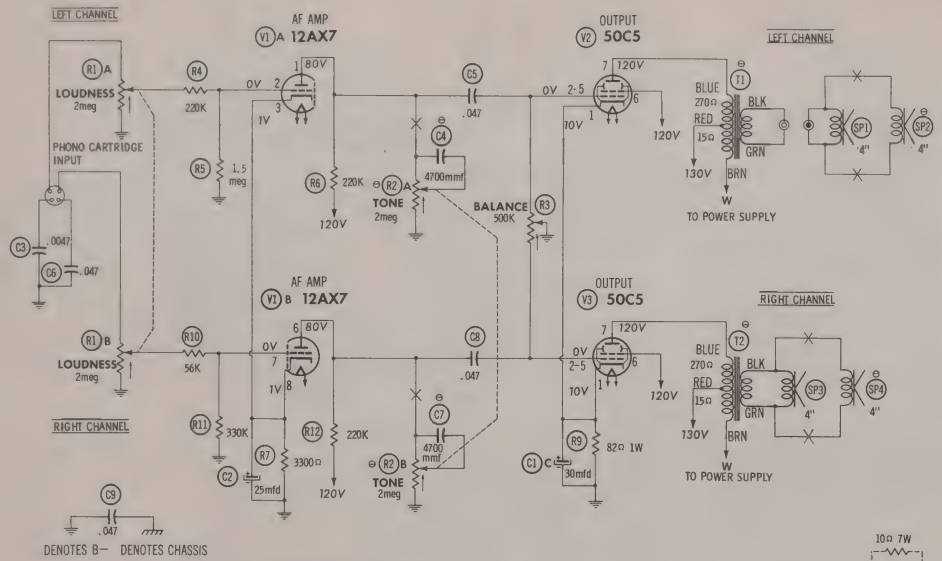
NAME	PART NO.	DESCRIPTION
Knob	108714	Volume
Knob	108780	Tone, Model SES-4JE
Knob	108715	Balance
Cabinet	X4675	Gray & White, Model SES-4JE
Cabinet	X4676	Sandalwood, Model SES-3K
Cabinet	X4677	Mist Gray, Model SES-3JH
Handle	108720	Cabinet, Mist Gray, Model SES-3JH
Handle	108721	Cabinet, Sandalwood, Model SES-3K
Handle	108723	Cabinet, Gray, Model SES-4JE

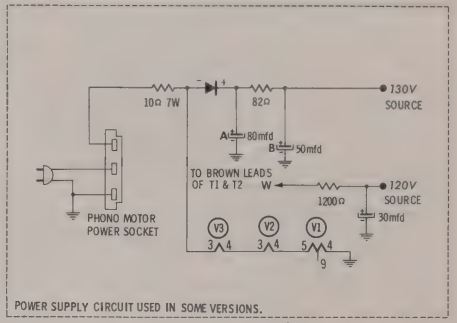
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

RCA VICTOR MODELS
SES-3JH, -3K, -4JE (Ch. RS-184, A)

FOLDER 13





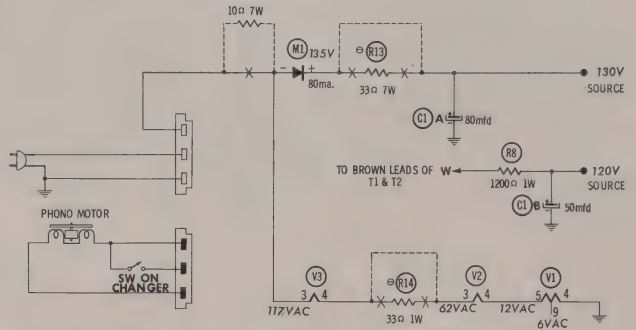
POWER SUPPLY CIRCUIT USED IN SOME VERSIONS.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†220K	0Ω	3300Ω	0Ω	12Ω	†220K	0Ω	3300Ω	6Ω
V2	50C5	82Ω	250K	62Ω	12Ω	250K	†1200Ω	†300Ω		
V3	50C5	82Ω	250K	145Ω	95Ω	250K	†1200Ω	†300Ω		

† MEASURED FROM OUTPUT OF M1.



Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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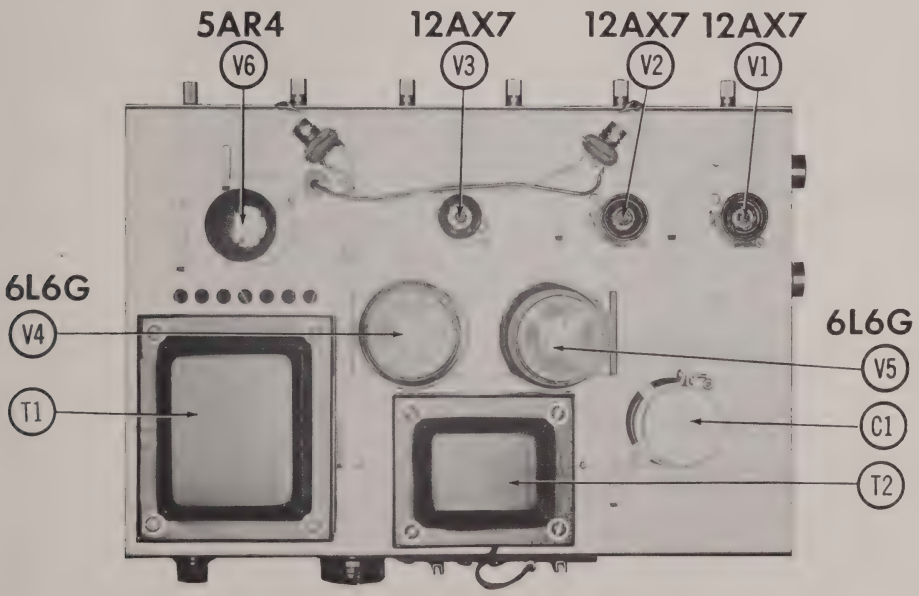
RCA VICTOR MODELS
5ES-3JH, -3K, -4JE (Ch. RS-184, A)

PHOTOFACT® Folder

**REALISTIC MODEL
PA30/60**

TRADE NAME	Realistic Model PA30/60		
SUPPLIER	Radio Shack Corp., 730 Commonwealth Ave., Boston 17, Mass.		
TYPE SET	AC Operated 6 Tube Audio Amplifier		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	100 Watts, .9 Amp.@ 117 Volts AC



REALISTIC MODEL
PA30/60

REALISTIC MODEL
PA30/60

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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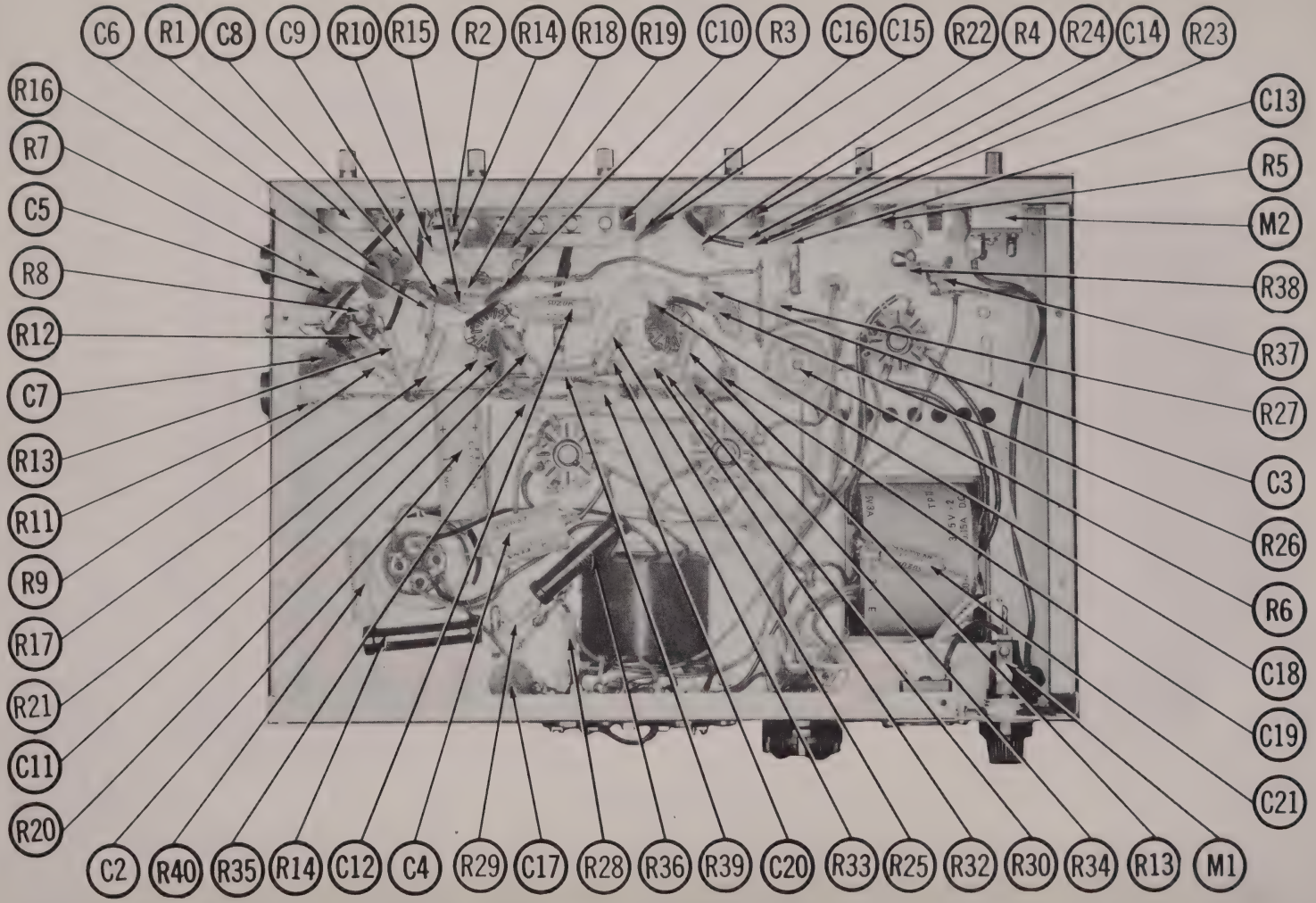
JX975

SET 501 FOLDER 14



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •			• RAYTHEON • SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Mic 1 Amp. - Mic 2 Amp.	12AX7	V4	Output	6L6G
V2	Phono Preamp. - AF Amp.	12AX7	V5	Output	6L6G
V3	AF Amp. - Phase Inverter	12AX7	V6	Rectifier	5AR4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	REALISTIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	40	450		AFH3-43	C0340	FP376.8	TMT-38	TVL-3785	
B	40	450							
C	10	450							
C2	10	450		PRS1720	BR1045	TC72	TD-10-450	TVA-1704	
C3	5	50		PRS1310	BBR5-50	TC30	TD-5-50	TVA-1303	
C4	50	50		PRS1350	BR505	TC39	TD-50-50	TVA-1308	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C7	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	.05	400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C13	300	5%			TCZ-300	22R5T3	CM-19B-301J	MCE241	MS-33
C14	1000			BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C15	1500			BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C16	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C19	.02	400V		P488N-02	DD-203	CUB6S2	4DP-2-203	GEM-412	4TM-S2
C20	.02	400V		P488N-02	DD-203	CUB6S2	4DP-2-203	GEM-412	4TM-S2
C21	.03	400V		P488N-03	DD-303	CUB6S3	4DP-2-303	GEM-413	4TM-S3

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	REALISTIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½		AB-60				Mic 1
B	Shaft			AK-29				
R2A	500K	½		AB-60				Mic 2
B	Shaft			AK-29				
R3A	500K	½		AB-60				Phono
B	Shaft			AK-29				
R4A	1meg	½		AB-70				Bass
B	Shaft			AK-29				
R5A	1meg	½		AB-70				Treble
B	Shaft			AK-29				
R6A	100Ω	2(WW)		WN-101	A43-100	W11-084	R100L	Hum Balance
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R7	500K	
R8	3.3meg	
R9	220K 1W	
R10	500K	
R11	500K	
R12	3.3meg	
R13	220K 1W	
R14	500K	
R15	500K	
R16	22K	
R17	100K 1W	
R18	5000Ω	

ITEM No.	RATING	REMARKS
R19	500K	
R20	100K 1W	
R21	2000Ω	
R22	150K	
R23	30K	
R24	56K	
R25	100K 1W	
R26	2000Ω	
R27	200Ω	
R28	68K 1W	
R29	2000Ω 1W	
R30	100K	

ITEM No.	RATING	REMARKS
R31	100K 1W	
R32	5000Ω	
R33	100K 1W	
R34	220K	
R35	220K	
R36	200Ω 10W	IRC#PW10 200Ω
R37	270Ω 1W	
R38	270Ω 1W	
R39	50K 1W	
R40	3300Ω 10W	IRC#PW10 3300Ω
R41	4500Ω 10W	IRC#PW10 4500Ω

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	REALISTIC PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ .9A	680VCT @ .130A	5V @ 1.9A	TP-73			PM8422	24R05		
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 3A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	REALISTIC PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6300Ω CT	250Ω (70V) Tap @ 16Ω, 8Ω, 4Ω							

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			REALISTIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1		2A 250V						

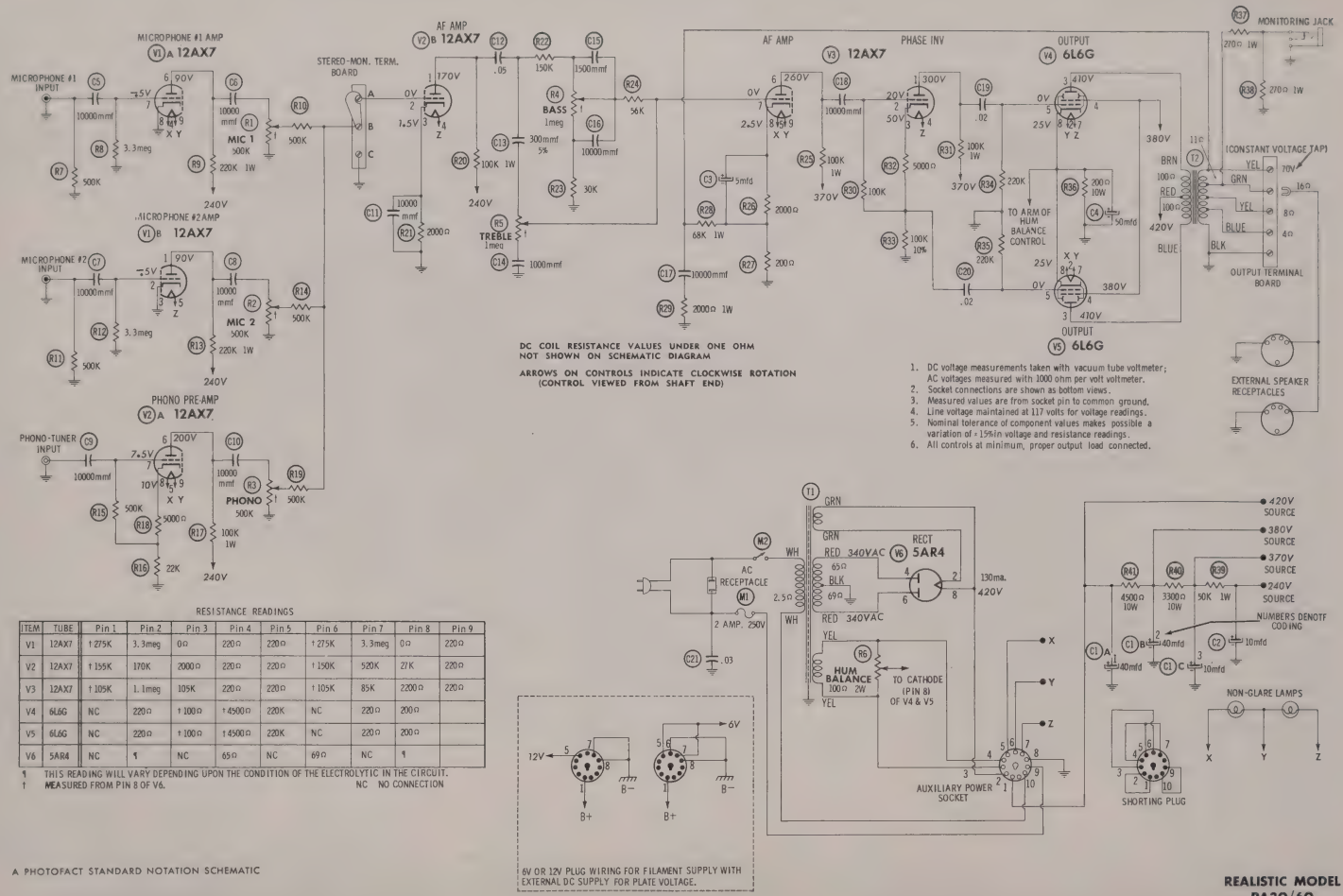
MISCELLANEOUS

ITEM No.	PART NAME	REALISTIC PART No.	NOTES
M2	Switch		Off-On

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)


MICROPHONE #1 AMP
V1A 12AX7
MICROPHONE #1 INPUT
MIC 1 500K
MICROPHONE #2 AMP
V1B 12AX7
MICROPHONE #2 INPUT
MIC 2 500K
PHONO PRE-AMP
V2A 12AX7
PHONO-TUNER INPUT
PHONO 500K
STEREO-MON. TERM. BOARD
AF AMP
V2B 12AX7
BASS 1meg
TREBLE 1meg
AF AMP
V3 12AX7
PHASE INV
OUTPUT
V4 6L6G
OUTPUT
V5 6L6G
TO ARM OF HUM BALANCE CONTROL
MONITORING JACK
CONSTANT VOLTAGE TAPS
OUTPUT TERMINAL BOARD
EXTERNAL SPEAKER RECEPTACLES
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.
AC RECEPTACLE
2 AMP. 250V
RECT V6 5AR4
HUM BALANCE 100Ω 2W
TO CATHODE (PIN 8) OF V4 & V5
AUXILIARY POWER SOCKET
420V SOURCE
380V SOURCE
370V SOURCE
240V SOURCE
NUMBERS DENOTE CODING
NON-GLARE LAMPS
SHORTING PLUG
6V OR 12V PLUG WIRING FOR FILAMENT SUPPLY WITH EXTERNAL DC SUPPLY FOR PLATE VOLTAGE.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†275K	3.3meg	0Ω	220Ω	220Ω	†275K	3.3meg	0Ω	220Ω
V2	12AX7	†155K	170K	2000Ω	220Ω	220Ω	†150K	520K	27K	220Ω
V3	12AX7	†105K	1.1meg	105K	220Ω	220Ω	†105K	85K	2200Ω	220Ω
V4	6L6G	NC	220Ω	†100Ω	†4500Ω	220K	NC	220Ω	200Ω	
V5	6L6G	NC	220Ω	†100Ω	†4500Ω	220K	NC	220Ω	200Ω	
V6	5AR4	NC	¶	NC	65Ω	NC	69Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V6. NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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REALISTIC MODEL PA30/60

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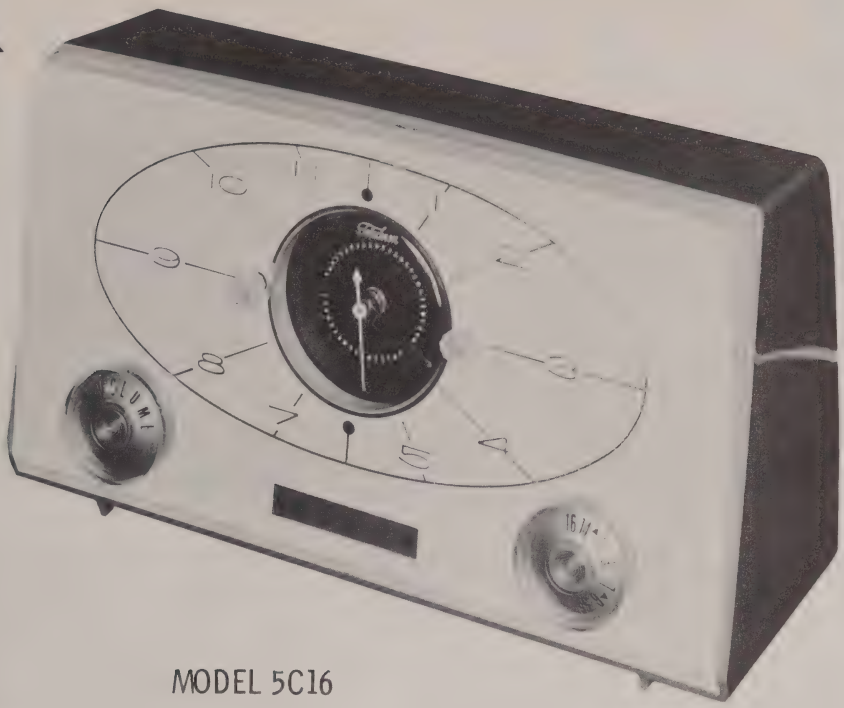
ROLAND MODELS
5C16, 5T16

ROLAND MODELS
5C16, 5T16



MODEL 5C16

ROLAND MODELS
5C16, 5T16

TRADE NAME	Roland Models 5C16, 5T16
MANUFACTURER	Roland Radio Corp., A Div. of Herold Radio & Electronics, 716 S. Columbus Ave., Mount Vernon, N. Y.
TYPE SET	AC Operated 5 Tube AM Receiver With Electric Clock (Model 5T16 is not a Clock Version)
POWER SUPPLY	110-120 Volts AC, 60 Cycles
TUNING RANGE—BROADCAST	540 — 1620KC RATING 23 Watts, .22 Amp. @117 Volts AC (Less Clock)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

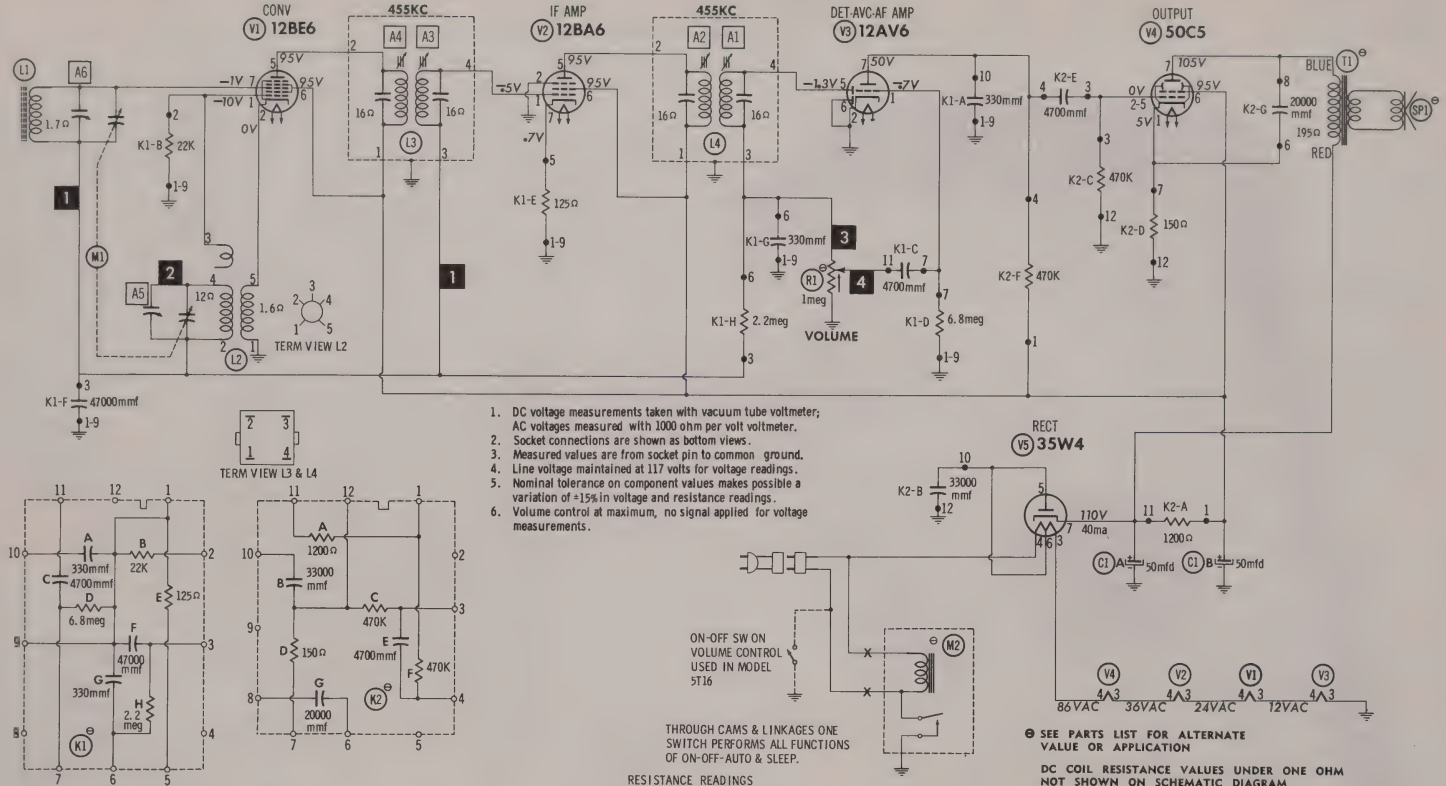
Suggested Alignment Tools: A1 thru A4....GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6.....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to RF stator lug of tuning gang. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1620KC	"	"	A5	"
3.	Loop	1400KC	Tune to 1400KC Signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking tuning gang.

SET 501 FOLDER 15

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	1.6Ω	12Ω	24Ω	†1200Ω	†1200Ω	3.2meg
V2	12BA6	3.2meg	0Ω	24Ω	36Ω	†1200Ω	†1200Ω	125Ω
V3	12AV6	6.8meg	0Ω	0Ω	12Ω	1meg	0Ω	†470K
V4	50C5	150Ω	470K	36Ω	86Ω	470K	†1200Ω	†195Ω
V5	35W4	NC	NC	86Ω	120Ω	115Ω	115Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5. NC NO CONNECTION

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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ROLAND MODELS 5C16, 5T16

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	12BE6	V4	Output	50C5
V2	IF Amplifier	12BA6	V5	Rectifier	35W4
V3	Det.-AVC-AF Amp.	12AV6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ROLAND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	582012	PRS2210	ESS-7515	PWD221	TDLD-9	TVA-2453	
B	50	150							

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ROLAND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	1meg	½	368059				P2-16A	Volume Note 1

Note 1. Model 5T16 uses 1meg with switch (Part #368060).

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ROLAND PART No.	REPLACEMENT DATA
K1	RF-IF Module	330mmf, 330mmf, 4700mmf, 47000mmf, 125Ω, 150Ω, 22K, 2.2meg, 6.8meg	426002	Note 1
K2	Audio-Power Module	4700mmf, 20000mmf, 33000mmf, 12000Ω, 470K, 470K	426001	Note 2

Note 1. Some versions may use Part #426004.
Note 2. Some versions may use Part #426003.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		ROLAND PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	464033		2002		
L2	Osc. Coil	455085				
L3	Input IF	450029	BC-356	13-PC1	RF-4	
L4	Output IF	450030	BC-357	13-PC2	RF-4	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ROLAND PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2800Ω	4-6Ω	(Part of SP1)	A-3025	AU-605	A-3332	24S53	S-12X	

PRINTED BOARD

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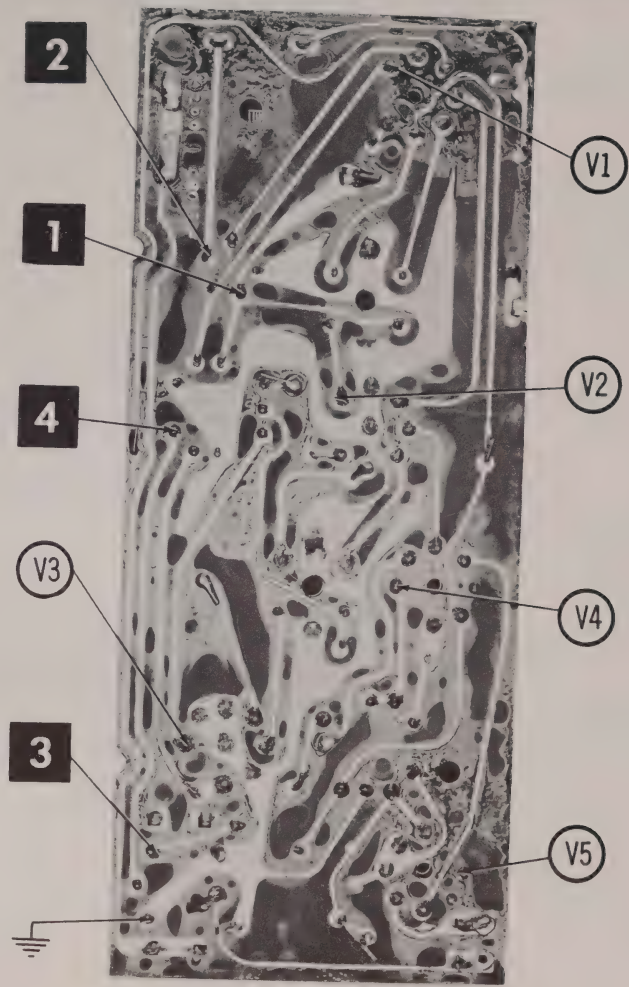
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ROLAND PART No.	QUAM PART No.	
SP1	4"	PM	4-6Ω	404020 *	4A07RZ4.2	* Includes T1. Part #404023 available without transformer.

MISCELLANEOUS

ITEM No.	PART NAME	ROLAND PART No.	NOTES
M1	Tuning Cap.	590056	2 Gang
M2	Clock	384022	(Telechron) Not used in Model 5T16
	Printed Board	420021	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

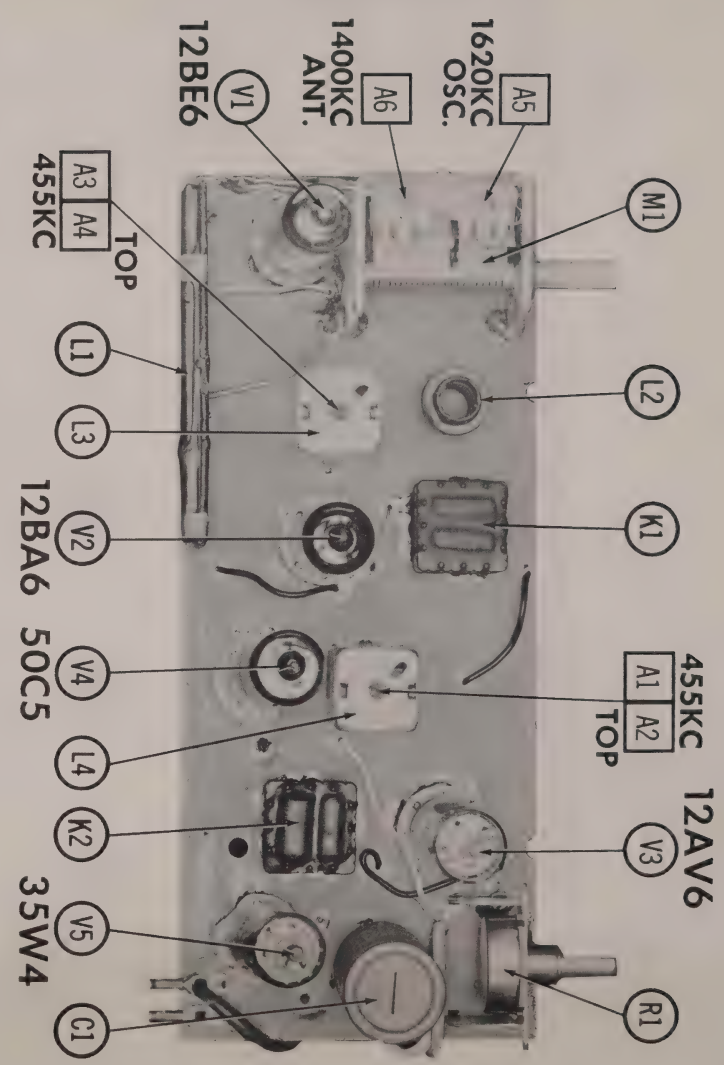
NAME	PART NO.	DESCRIPTION
Knob	272331	Tuning
Knob	272330	Volume
Knob	272219	Clock, Model 5C16
Crystal	260015	Clock, Model 5C16
Cabinet	250520	Front, White, Model 5T16
Cabinet	250542	Rear, Turquoise, Model 5T16
Cabinet	250543	Rear, Rust, Model 5T16
Cabinet	250530	Front, White, Model 5C16
Cabinet	250541	Rear, Pink, Model 5C16
Cabinet	250543	Rear, Rust, Model 5C16

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—TOP VIEW



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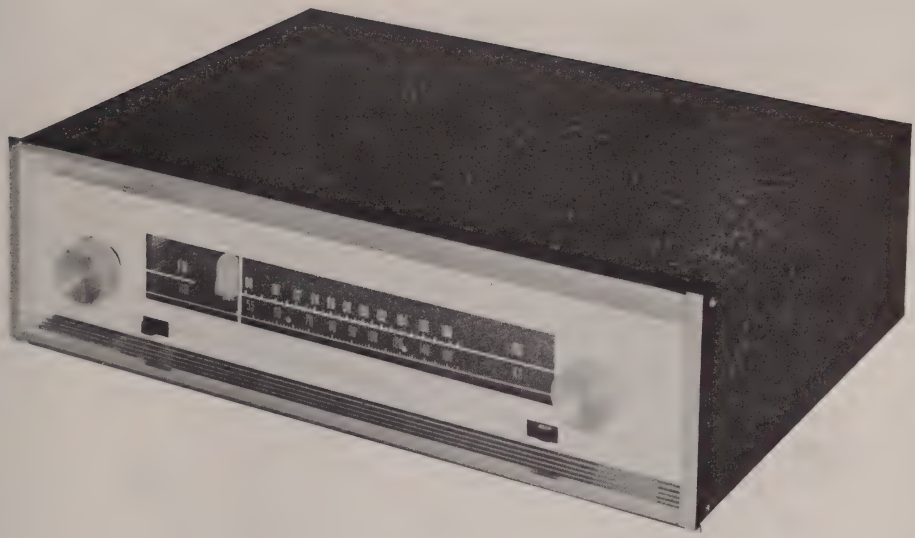
SHERWOOD MODEL S-2000II

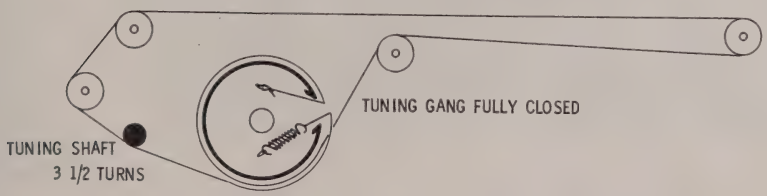
SHERWOOD
MODEL S-2000II



SHERWOOD
MODEL S-2000II

TRADE NAME	Sherwood Model S-2000II		
MANUFACTURER	Sherwood Electronic Laboratories, Inc., 4300 N. California Ave., Chicago 18, Illinois		
TYPE SET	AC Operated 13 Tube FM-AM Tuner		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	56 Watts, .54 Amp. @ 117 Volts AC
TUNING RANGE	BROADCAST 530-1650KC		

DIAL CORD STRINGING



REAR VIEW

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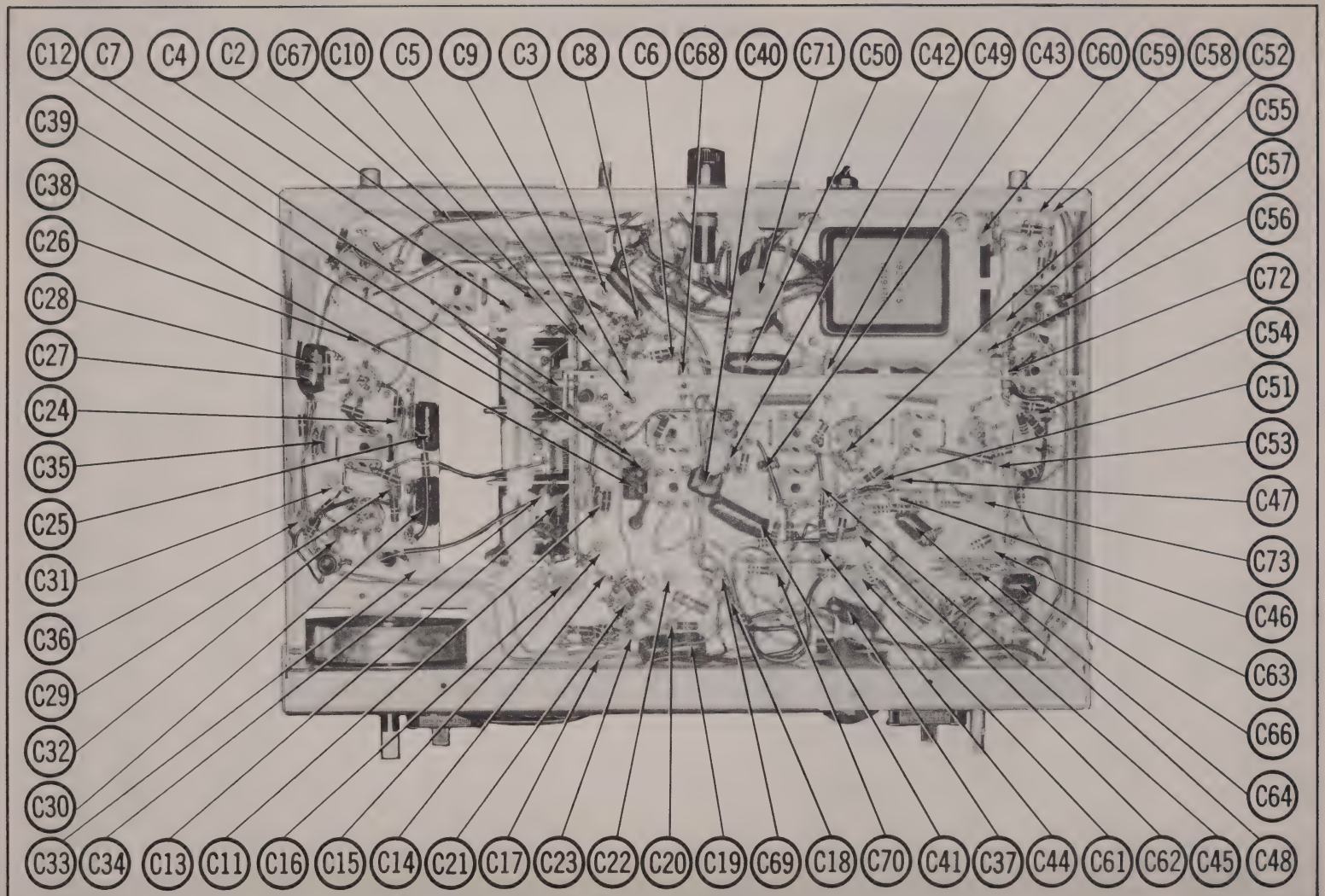
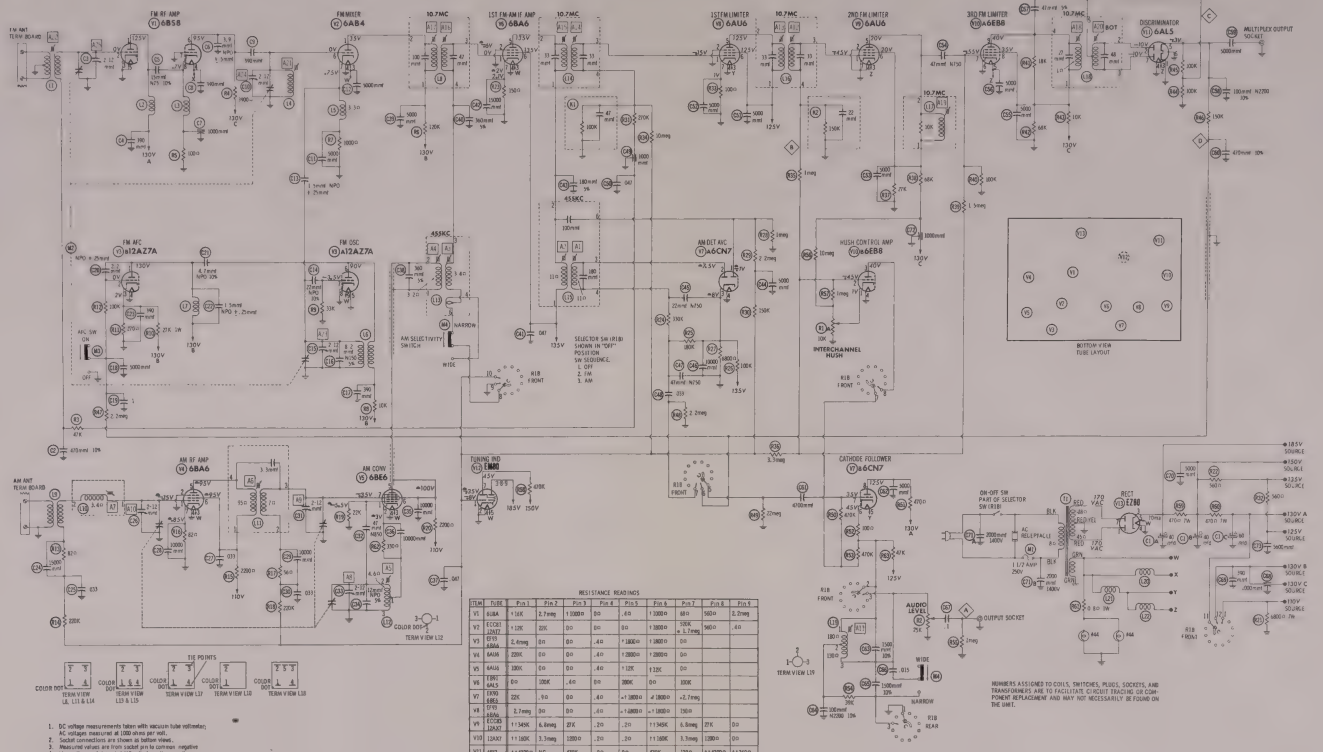
SET 501 FOLDER 16



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6U8A	1.6K	2.7meg	1.0000Ω	0Ω	.4Ω	1.0000Ω	68Ω	560Ω	2.7meg
V2	ECC81 12AT7	1.2K	22K	0Ω	0Ω	0Ω	1.3000Ω	330K ± 1.7meg	960Ω	.4Ω
V3	EF93 6BA6	2.4meg	0Ω	0Ω	.4Ω	1.1800Ω	1.1800Ω	0Ω		
V4	6AU6	220K	0Ω	0Ω	.4Ω	1.2800Ω	1.2800Ω	0Ω		
V5	6AU6	330K	0Ω	0Ω	.4Ω	1.2K	1.2K	0Ω		
V6	EBF6 6AL5	0Ω	330K	.4Ω	0Ω	330K	0Ω	330K		
V7	EB90 6BE6	22K	9Ω	0Ω	.4Ω	1.1800Ω	.4 1800Ω	2.7meg		
V8	EF91 6BA6	2.7meg	0Ω	0Ω	.4Ω	1.1680Ω	1.1850Ω	150Ω		
V9	ECC83 12AX7	1.345K	6.6meg	27K	2Ω	2Ω	1.345K	6.6meg	27K	0Ω
V10	12AX7	1.160K	3.3meg	1.200Ω	2Ω	2Ω	1.160K	3.3meg	1.200Ω	0Ω
V11	6H13	1.470Ω	NC	470K	2Ω	0Ω	470K	270Ω	1.470Ω	1.350Ω
V12	6H13	1.470Ω	NC	470K	2Ω	0Ω	470K	270Ω	1.470Ω	1.375Ω
V13	EZ80	160Ω	NC	1	2Ω	0Ω	NC	150Ω	NC	NC

ALL RESISTANCES TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
§ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THAT CIRCUIT.
▲ MEASURED IN "AM" POSITION. † MEASURED FROM OUTPUT OF V6.
■ MEASURED IN "AFC ON" POSITION. †† MEASURED FROM PIN 3 OF V13.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum-tube voltmeter.
2. AC voltages measured at 1,000 ohms per volt.
3. Socket connections are shown as bottom views.
4. Measured values are from socket pin to common negative.
5. Line voltage maintained at 117 volts for voltage readings.
6. Horizontal deviation on component values makes possible a variation of ±5% in voltage and resistance readings.
7. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

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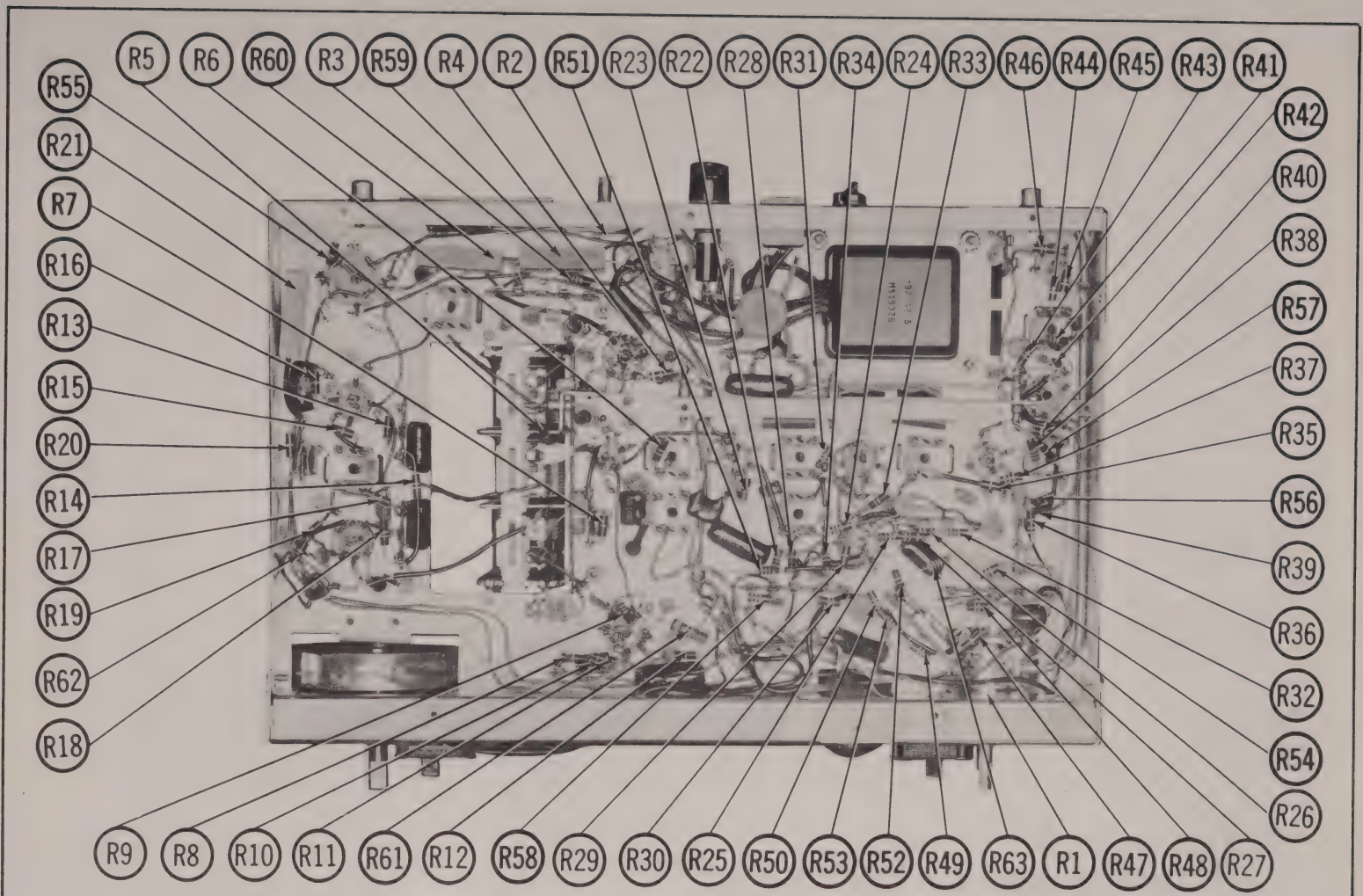
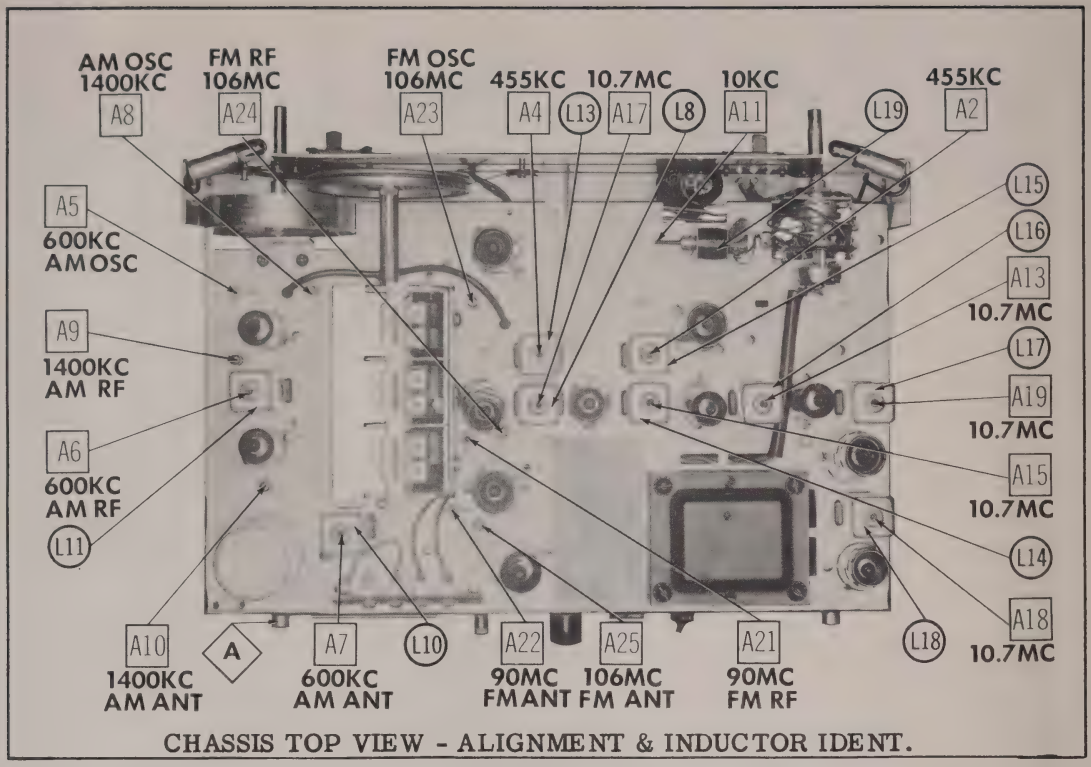
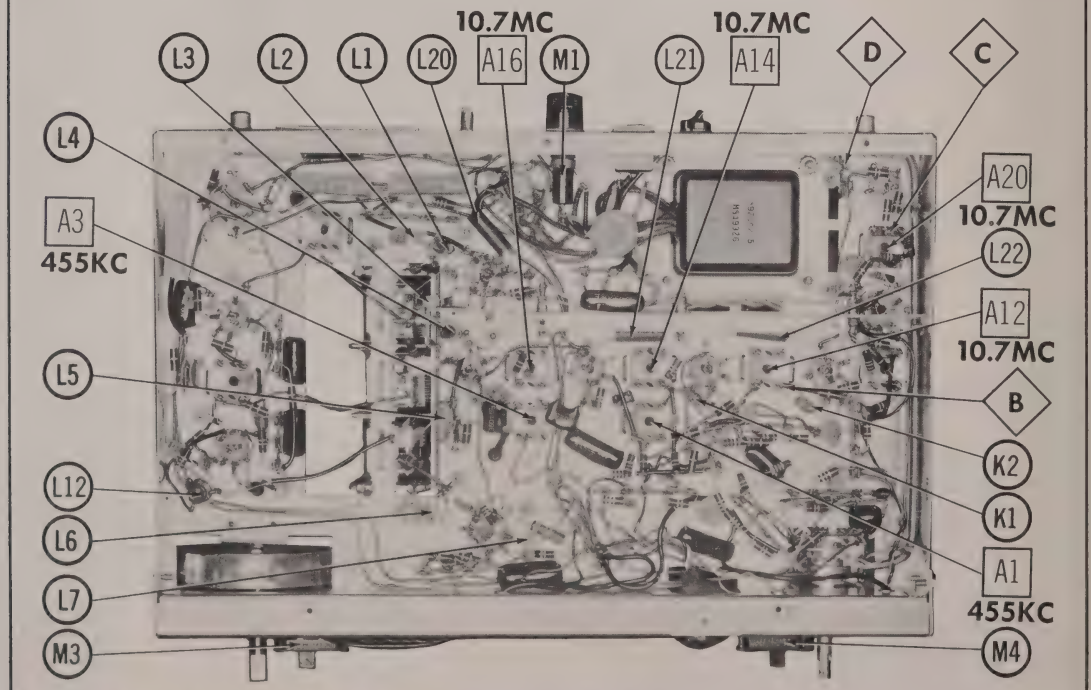
SHERWOOD MODEL S-2000II



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



CHASSIS TOP VIEW - ALIGNMENT & INDUCTOR IDENT.



CHASSIS BOTTOM VIEW - ALIGNMENT, INDUCTOR & MISC. IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Use only enough sweep generator output to provide a usable pattern on scope.
Suggested Alignment Tools: A1 thru A4, A6, A7, A12 thru A20 ... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A8, A9, A10, A23, A24, A25 ..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, #8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534,
A5, A21, A22 ..... GENERAL CEMENT #8282 2537, 2538
WALSCO #2526

AM ALIGNMENT - SELECTOR IN AM POSITION

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open	AC probe to point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	"	455KC (50KC Swp.)	"	USE SCOPE Vert. Amp. to point (A). Low side to chassis.		Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. Retouch A1 thru A4 for maximum gain and symmetry of response.
3.	High side thru 220mmf to AM antenna terminal. Low side to chassis.	600KC (400∿ Mod.)	Tune to 600KC signal	AC probe to point (A). Common to chassis.	A5, A6, A7	Adjust for maximum deflection.
4.	"	1400KC	Tune to 1400KC signal	"	A8, A9, A10	Adjust for maximum deflection. Repeat steps 3 and 4.
5.	High side thru .02mfd to pin 7 of Cathode follower. Low side to chassis.	10KC (Unmod.)	Point of non-interference	"	A11	Adjust for MINIMUM deflection.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM - SELECTOR IN FM POSITION

AFC "OFF"

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	High side thru .01mfd to pin 6 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference	DC probe to point (B). Common to chassis.	A12, A13, A14, A15, A16, A17	Adjust for maximum deflection.
7.	"	"	"	DC probe thru 1meg to point (C). Common to chassis.	A18, A19	"
8.	"	"	"	DC probe to point (D). Common to chassis.	A20	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE - SELECTOR IN FM POSITION

AFC "OFF"
Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120Ω sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.	High side thru .01mfd to pin 6 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp.)	(FM) Point of non-interference	Vert. Amp. to point (B). Low side to chassis.	A12, A13, A14, A15, A16, A17	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
7.	"	"	"	Vert. Amp. thru 27K to point (C). Low side to chassis.	A18, A19	"
8.	"	"	"	Vert. Amp. to point (D). Low side to chassis.	A20	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A18 for maximum amplitude and straightness of crossover lines.

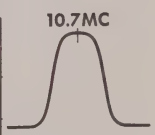


FIG. 1

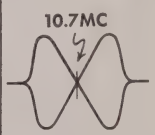


FIG. 2

FM RF ALIGNMENT - SELECTOR IN FM POSITION

AFC "OFF"
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	Across FM antenna terminals with 120Ω in each lead.	90MC (Unmod.)	(FM) 90MC	DC probe to point (B). Common to chassis.	L6, A21, A22	Adjust for maximum deflection. (L6 is adjusted by expanding or compressing coil turns.)
10.	"	106MC	106MC	"	A23, A24, A25	Adjust for maximum deflection. Repeat steps 9 and 10.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (CBS / GENERAL ELECTRIC)
V1	FM RF Amplifier	6BS8
V2	FM Mixer	6AB4
V3	FM Osc. - FM AFC	12AZ7A
V4	AM RF Amplifier	6BA6
V5	AM Converter	6BE6
V6	1st FM - AM IF Amp.	6BA6
V7	AM Det. - AVC - Cathode Follower	6CN7

ITEM No.	USE	TYPE (RAYTHEON / SYLVANIA)
V8	1st FM Limiter	6AU8
V9	2nd FM Limiter	6AU8
V10	3rd FM Limiter - Hush Control Amp.	6EB8
V11	Discriminator	6AL5
V12	Tuning Indicator	EM80/6BR5
V13	Rectifier	EZ80/6V4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	SHERWOOD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▪40	250	120AD1-4	AFH3-25-50	D0020	FP327.87		TVL-3583	
B	▪40	250			BR3025				
C	▲60	250							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C3	2-12							
C4	390		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C5	15 N75 10%							
C6	3.9 NPO ±.5mmf		NPO-DI 3.3		C10V4C			10TCC-V39
C7	1000		EF-001	MFT-1000		CCF-102	CT280A	
C8	390		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C9	390		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C10	2-12							
C11	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C12	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C13	1.5 NPO ±.25mmf		NPO-DI 1.5	DTZ-1R5	C10V15C		CNO-515	10TCC-V15
C14	22 NPO 10%		NPO-DI 22	DTZ-22	C10Q22C	CCTO-220	CNO-422	10TCC-Q22
C15	2-12							
C16	8.2 N150 5%							10TCP-V82
C17	390		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C18	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C19	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C20	2.2 NPO ±.25mmf		NPO-DI 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C21	4.7 NPO 10%		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C22	1.5 NPO ±.25mmf		NPO-DI 1.5	DTZ-1R5	C10V15C		CNO-515	10TCC-V15
C23	390		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C24	15000		BPD-015	DD-153	BYA10S15	CCD-153	B-115	5HK-S15
C25	.033 400V		P488N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C26	2-12							
C27	.033 400V		P488N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	.033 400V		P488N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C31	2-12							
C32	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C33	2-12							
C34	12 NPO 5%			TCZ-12	C10Q12C	CCTO-120	CNO-412	10TCC-Q12
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C37	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C38	360 5%		1469-00036		22R5T36	CM-19B-361J		MS-336
C39	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C40	360 5%		1469-00036		22R5T36	CM-19B-361J		MS-336
C41	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C42	15000		BPD-015	DD-153	BYA10S15	CCD-153	B-115	5HK-S15
C43	180 5%		1469-00018	DTZ-180	22R5T18	CM-19B-181J	CNO-318	MS-318
C44	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C45	22 N750		N750-DI 22	DTN-22	C10Q22U	CCTN-220	CN7-422	10TCU-Q22
C46	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C47	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C48	.033 400V		P488N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C49	1000		EF-001	MFT-1000		CCF-102	CT280A	
C50	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C51	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C52	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C53	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C54	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C55	5000		BPD-005	DD-503	BYA10D5	CCD-502	B-250	5HK-D50
C56	5000		BPD-005	DD-503	BYA10D5	CCD-502	B-250	5HK-D50
C57	47 5%		1469-000047	TCZ-47	22R5Q47	CM-19B-470J	CNO-447	MS-447
C58	100 N2200 10%					*		30TCY-T10
C59	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C60	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C61	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C62	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C63	1500 10%		DI-1500	DD-152	1R5D15	CCD-152	GP215	10TS-D15
C64	100 N2200 10%					*		30TCY-T10
C65	1500 10%		DI-1500	DD-152	1R5D15	CCD-152	GP215	10TS-D15
C66	.015 400V		P488N-015	DD-153	CUB6S15	4DP-1-153	GEM-4115	4TM-S15
C67	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C68	1000		EF-001	MFT-1000		CCF-102	CT280A	

PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C69	390		DI-390	DD-390	L10T39	CCD-391	GP339	10TS-T39
C70	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C71A	2000 1400V		DAC-3	DD30-202	HVC20D2	3CCD-202	UAC-220	30GA-D20
B	2000 1400V		DAC-3	DD30-202	HVC20D2	3CCD-202	UAC-220	30GA-D20
C72	1000		EF-001	MFT-1000		CCF-102	CT280A	
C73	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SHERWOOD PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	10K	½	B860D5-4					Interchannel Hush Selector Power Off-On Audio Level
B	Switch							
C	Switch							
R2A	25K	½	670AD4	B-26	B47-25K-S	B11-120	TA253L	
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	47K	
R4	3900Ω	
R5	100Ω	
R6	120K	
R7	1000Ω	
R8	10K	
R9	33K	
R10	27K 1W	
R11	270Ω	
R12	100K	
R13	82Ω	
R14	220K	
R15	2200Ω	
R16	82Ω	
R17	56Ω	
R18	220K	
R19	22K	

ITEM No.	RATING	REMARKS
R20	2200Ω	
R21	6800Ω 7W	IRC #PW10 6800Ω
R22	560Ω	
R23	150Ω	
R24	330K	
R25	180K	
R26	100K	
R27	6800Ω	
R28	1meg	
R29	2.2meg	
R30	150K	
R31	270K	
R32	560Ω	
R33	100Ω	
R34	10meg	
R35	1meg	
R36	3.3meg	

ITEM No.	RATING	REMARKS
R37	27K	
R38	68K	
R39	1.5meg	
R40	100K	
R41	18K	
R42	68K	
R43	10K	
R44	100K	
R45	100K	
R46	150K	
R47	2.2meg	
R48	2.2meg	
R49	22meg	
R50	470K	
R51	470Ω	
R52	100Ω	
R53	470K	

RESISTORS (cont)

ITEM No.	RATING	REMARKS
R54	39K	
R55	1meg	
R56	10meg	
R57	1meg	

ITEM No.	RATING	REMARKS
R58	470K	
R59	470Ω 7W	IRC #PW10 470Ω
R60	470Ω 7W	IRC #PW10 470Ω
R61	0.8Ω 1W	

ITEM No.	RATING	REMARKS
R62	330Ω	
R63	47K	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SHERWOOD PART No.	REPLACEMENT DATA
K1	1st Limiter Grid Filter	47mmf, 100K		
K2	2nd FM Grid Filter	22mmf, 150K		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SHERWOOD PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Trans.							
L2	RF Choke		19-1000	19-1000	BC-561	4602		1.2uh
L3	Cathode Choke		19-1000	19-1000	BC-561	4602		1.2uh
L4	FM RF Coil							
L5	Cathode Choke		19-1003	19-1003	BC-564	4608		3.9uh ①
L6	FM Osc. Coil							
L7	RF Choke		19-1000	19-1000	BC-561	4602		1.2uh
L8	1st FM IF		16-3487	16-3487	FM-254	1463		
L9	Loopstick		14-7002	14-7002	BC-418	705-A		
L10	AM Ant. Coil							
L11	AM RF Trans.							
L12	AM Osc. Coil				BC-393	70-Osc.		
L13	1st AM IF							
L14	2nd FM IF		16-3487	16-3487	FM-254	1463		
L15	2nd AM IF		16-6758 †	16-6758 †	BC-353 †	12-C2 †	RF-2 †	
L16	3rd FM IF		16-3487	16-3487	FM-254	1463		
L17	4th FM IF							
L18	Discriminator		17-3494	17-3494	FM-253	1464		
L19	10KC Filter							
L20	Fil. Choke		19-1002	19-1002	BC-563	4606		2uh
L21	Fil. Choke		19-1002	19-1002	BC-563	4606		2uh
L22	Fil. Choke		19-1002	19-1002	BC-563	4606		2uh

① IRC Part #CLA.

† Connect 100mmf cap externally.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	SHERWOOD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .54A	340VCT @ .070A	6.3V @ 4.2A	A922G2-5						

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SHERWOOD PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1½A 250V			31201.5 (3AG 1½ 250V)	342001	AGC 1½	HKP

MISCELLANEOUS

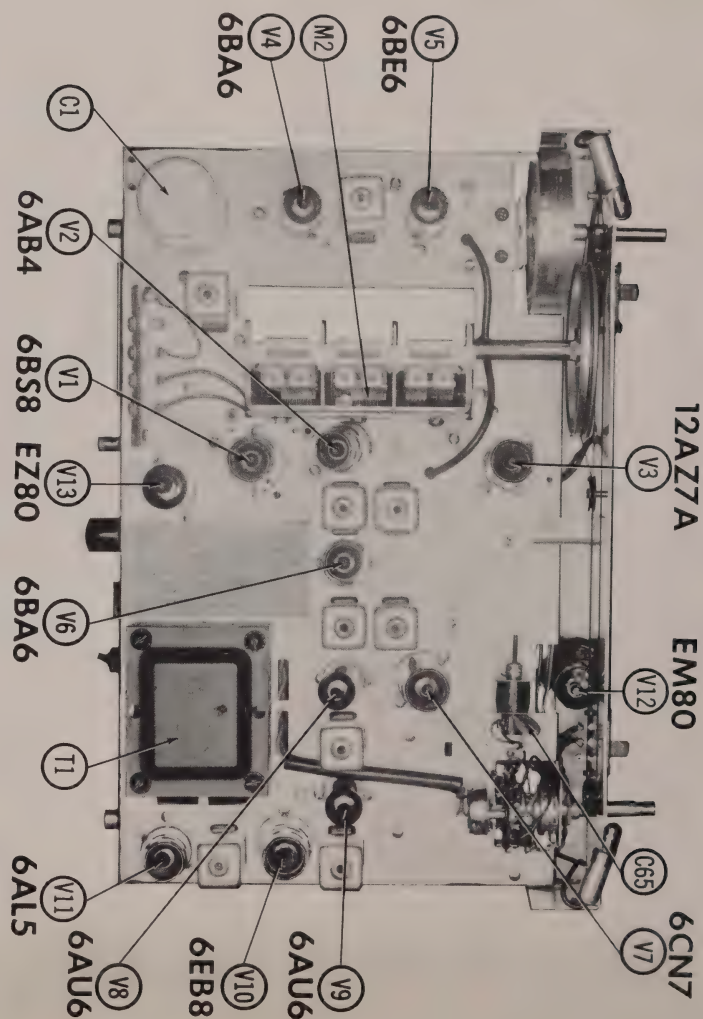
ITEM No.	PART NAME	SHERWOOD PART No.	NOTES
M2	Tuning Cap.		3 Gang
M3	Switch		AFC Off-On (SPDT) Slide Type)
M4	Switch		AM Selectivity (DPDT Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

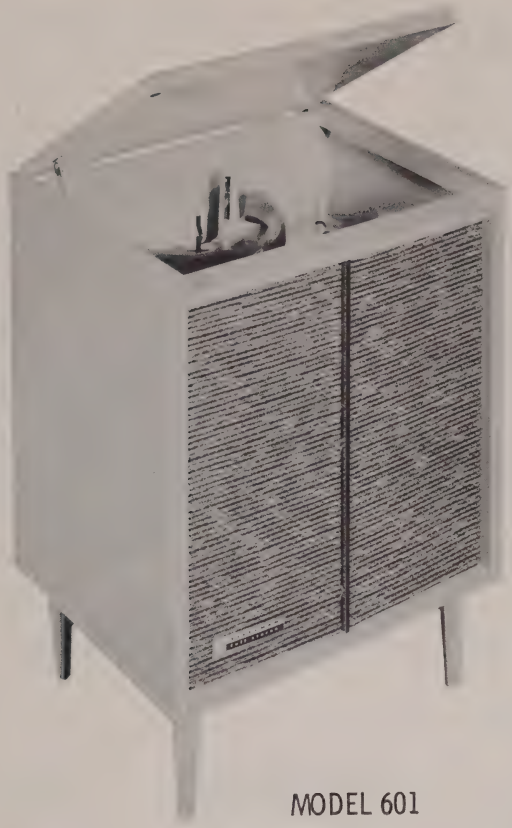
CHASSIS—TOP VIEW



PHOTOFACT® Folder

STEELMAN MODELS
404, 601

STEELMAN MODELS
404, 601



MODEL 601

STEELMAN MODELS
404, 601

TRADE NAME	Steelman Models 404, 601
MANUFACTURER	Steelman Phono & Radio Co., 2-30 Anderson Ave., Mount Vernon, N. Y.
TYPE SET	AC Operated 3 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 28 Watts, .29 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER PART #300413 — SEE MONARCH UA8 — PHOTOFACT SET 381 FOLDER 11 OR RECORD CHANGER MANUAL RC-11

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JT948

SET 501 FOLDER 17

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel AF Amp. - Right Channel AF Amp.	12AX7	V2	Left Channel Output	50EH5
			V3	Right Channel Output	50EH5

GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	80	150	583021	PR4-250	BBRQ0926.5	WQ410	TD1D-13	TVA-2460	
B	80	150					TD-20-150	TVA-1418	
C	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C3	1000		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C4	500		SI 500	D6-501	BYA10T5	CCD-501	B-350	10TS-T50
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	1000		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C9	500		SI 500	D6-501	BYA10T5	CCD-501	B-350	10TS-T50
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA STEELMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	368069	B-70	A47-1meg-Z	Q13-137	U53	Volume, Right Channel
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	1meg	½	368069	B-70	A47-1meg-Z	Q13-137	U53	Volume, Left Channel
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	250K	½	368068	B-51	AD47-250K-Z		FA254A	Tone, Right Channel
B	250K	½		SR-51	Not Req.		RU254A	Tone, Left Channel
C	Shaft			Not Req.	KSS-3		CS3500	

RESISTORS (IRC or EQUIVALENT)

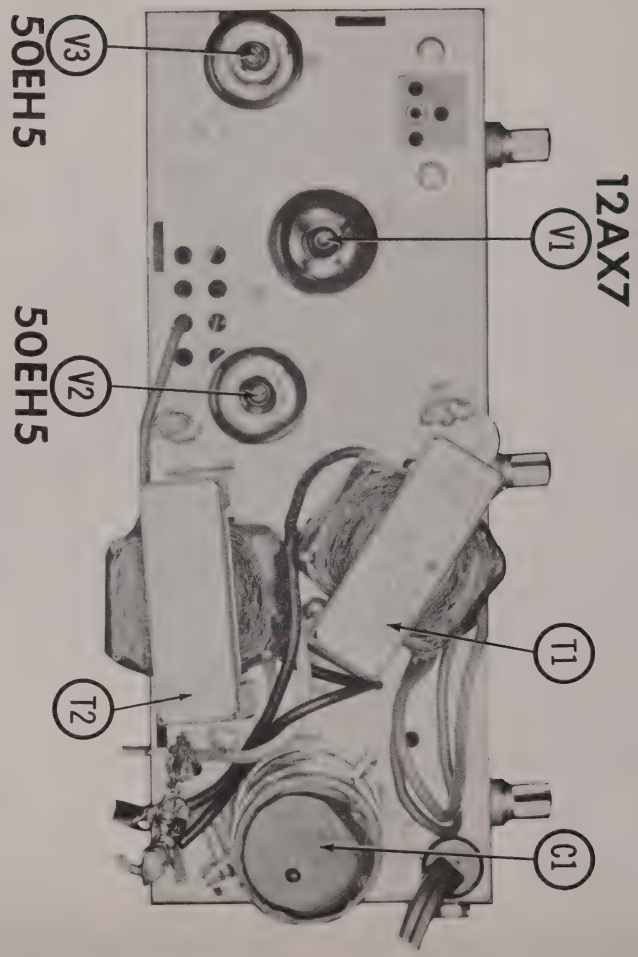
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	220K	
R5	6.8meg	
R6	100K	
R7	470K	
R8	68Ω	

ITEM No.	RATING	REMARKS
R9	220K	
R10	6.8meg	
R11	100K	
R12	470K	
R13	68Ω	

ITEM No.	RATING	REMARKS
R14	2200Ω 1W	
R15	125Ω 5W	IRC#PW5 125Ω
R16	47Ω 2W	
R17	47Ω 2W	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA STEELMAN PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	8700Ω	3-4Ω	430250	A-2900	AU-608	A-3850	24S04	S-51X	
T2	8700Ω	3-4Ω	430250	A-2900	AU-608	A-3850	24S04	S-51X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA STEELMAN PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	406002 *	6A31	* Model 601
SP2	6"	PM	3-4Ω	406002 *	6A31	‡ 2 Used, Model 404
	5 1/4"	PM		409014 ‡		

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA STEELMAN PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.070A	380020	RE504	1N1764	2F4	SR200	

PHONO CARTRIDGE

ITEM No.	STEELMAN PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M2		76TS-TB		26S	S1-1 S3-3			8TA4-S	N-8TA-S

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA STEELMAN PART No.	JENSEN PART No.	REMARKS
M3		CRA-55 † or CRA-55D ♦ & CRA-55LP † or CRA-55LPD ♦	† Jewel ♦ Diamond

CABINETS & CABINET PARTS

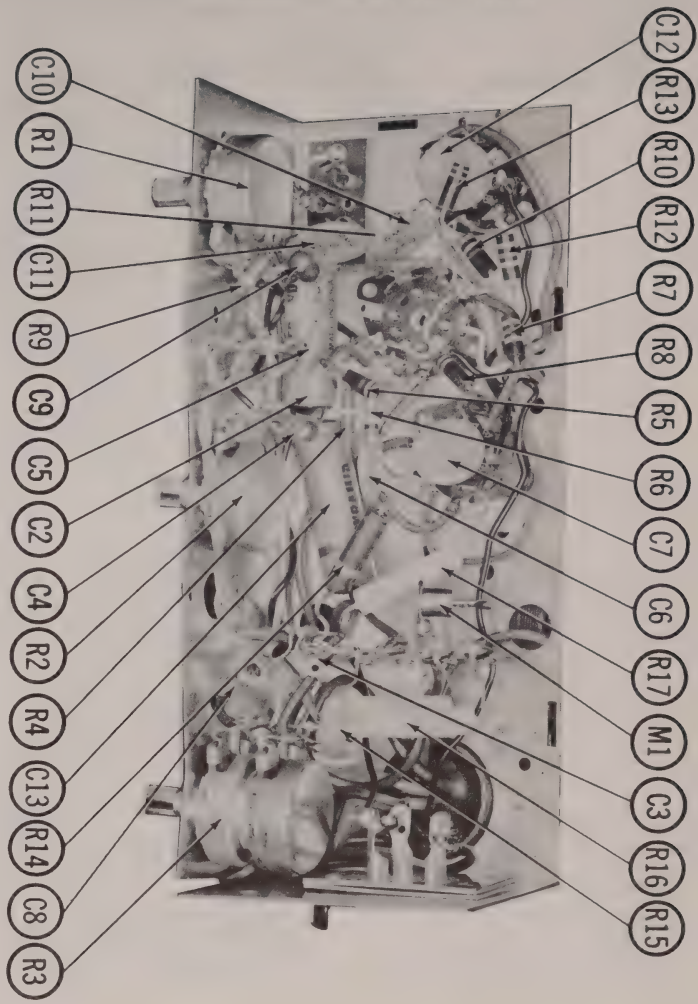
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

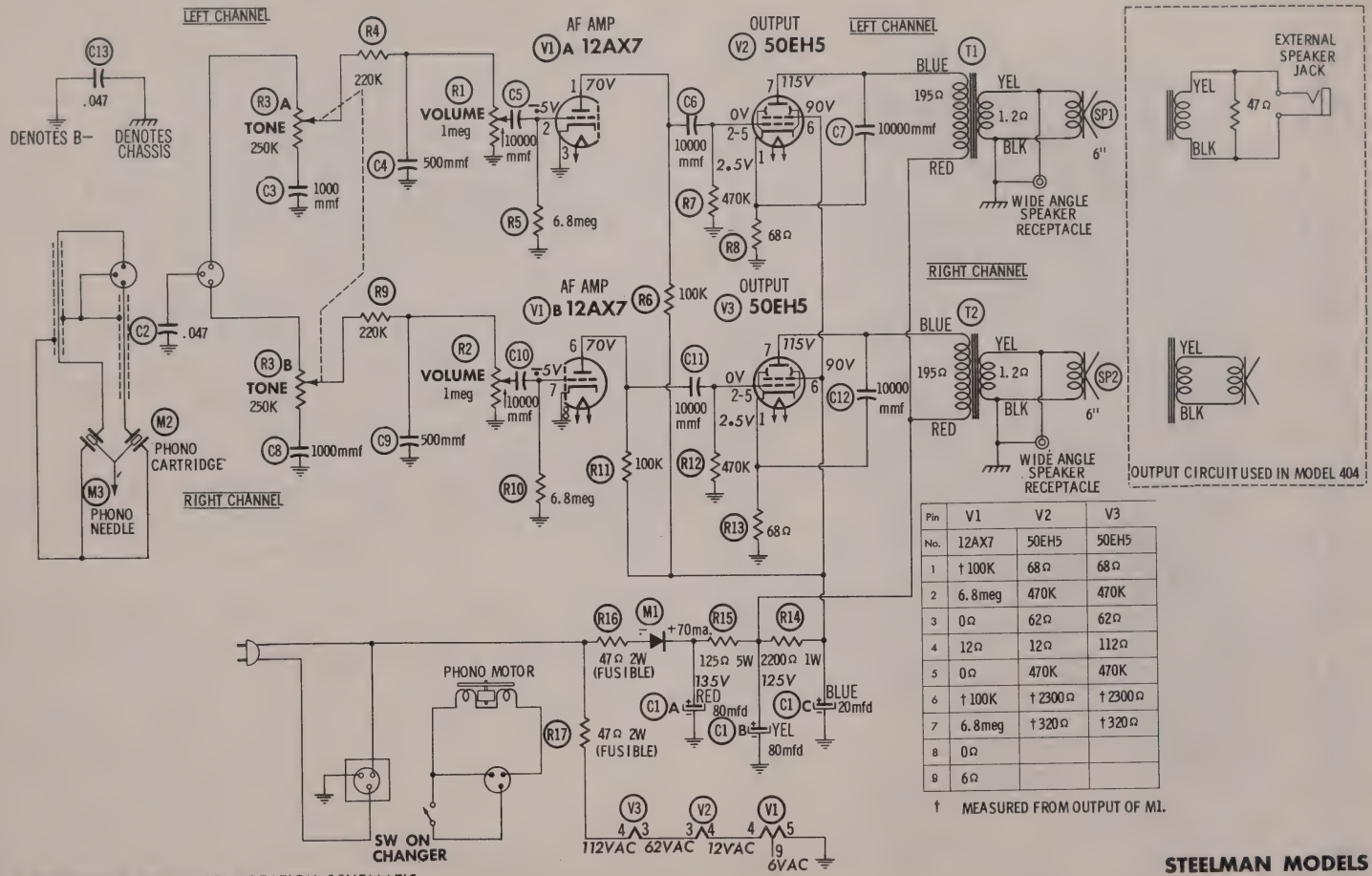
NAME	PART NO.	DESCRIPTION
Knob	272346	Volume, Tone, Model 601
Knob	272321	Volume, Tone, Model 404
Cabinet	211240	Mahogany, Model 601
Cabinet	211241	Limed Oak, Model 601
Cabinet	241490	Blue & White, Model 404
Cabinet	241500	Charcoal & Gray, Model 404

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





Pin No.	V1 12AX7	V2 50EH5	V3 50EH5
1	†100K	68Ω	68Ω
2	6.8meg	470K	470K
3	0Ω	62Ω	62Ω
4	12Ω	12Ω	112Ω
5	0Ω	470K	470K
6	†100K	†2300Ω	†2300Ω
7	6.8meg	†320Ω	†320Ω
8	0Ω		
9	6Ω		

† MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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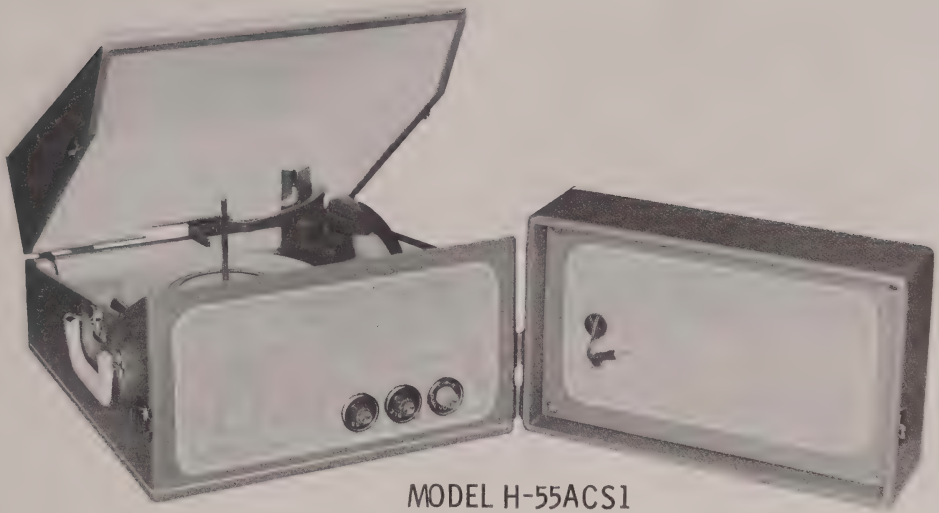
STEELMAN MODELS 404, 601

PHOTOFACT® Folder

WESTINGHOUSE MODELS H-55ACS1, H-55ACS2 (Ch. V-2508-4)

WESTINGHOUSE MODELS H-55ACS1, H-55ACS2 (Ch. V-2508-4)



MODEL H-55ACS1

WESTINGHOUSE MODELS H-55ACS1, H-55ACS2 (Ch. V-2508-4)

TRADE NAME	Westinghouse Models H-55ACS1, H-55ACS2 (Ch. V-2508-4)		
MANUFACTURER	Westinghouse Electric Corp., Radio-TV Div., Metuchen, N. J.		
TYPE SET	AC Operated 3 Tube Stereo Amplifier with 4 Speed Automatic Record Changer		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	25 Watts, .25 Amp. @ 117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER PART #670V008H01 - SEE SIMILAR MONARCH UA12 - PHOTOFACT SET 465 FOLDER 6

SET 501 FOLDER 18

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JT850

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

PARTS LIST AND DESCRIPTIONS

TUBES

• CBS • GENERAL ELECTRIC •			• RAYTHEON • SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel Output	50EH5	V3	Rectifier	35W4
V2	Right Channel Output	50EH5			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	80	150	218V025H34	PRS4650	BBRT8415C	TCT3117	TDLT-7	TVA-3455	
B	40	150							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C3	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C4	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Westinghouse PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg		270V085H01					Volume, Right Channel
B	2meg							Volume, Left Channel
R2A	1meg		270V062H06	B-69	AD47-1meg-S	Q11-137	FA16L	Treble, Right Channel
B	1meg			SR-69	Not Req.	M11-137	RU16L	Treble, Left Channel
C	Shaft			Not Req.	FS-3	Not Req.	CS3500	
R3A	3meg		270V062H07	B-84			FA36L	Bass, Right Channel
B	3meg			SR-84			RU36L	Bass, Left Channel
C	Shaft			Not Req.			CS3500	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	100K	
R5	470K	
R6	2.2meg	

ITEM No.	RATING	REMARKS
R7	100K	
R8	470K	
R9	2.2meg	

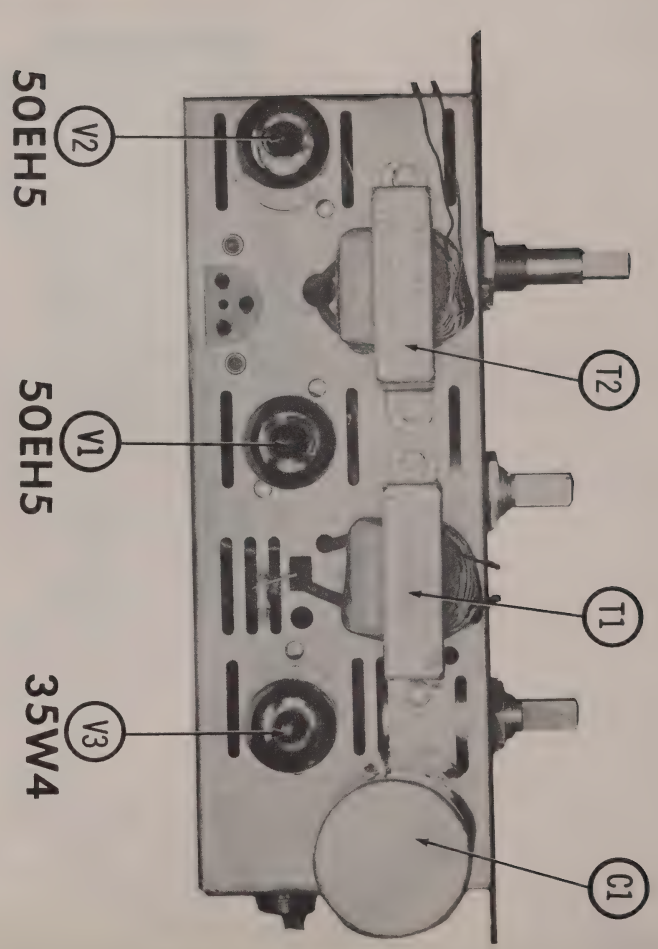
ITEM No.	RATING	REMARKS
R10	39Ω	
R11	3300Ω 1W	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2800Ω	3-4Ω	430V085H01①	24S53	A-3025	AU-605	A-3332	24S53	S-12X	
T2	2800Ω	3-4Ω	430V085H01①	24S53	A-3025	AU-605	A-3332	24S53	S-12X	

① Alternate Part #430V084H01

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	QUAM PART No.	
SP1	5-1/4"	PM	3-4Ω	570V067H01	52A21	
SP2	5-1/4"	PM	3-4Ω	570V067H01	52A21	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA								
	Westinghouse PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M1	671V010H01	76TS	N8-7 N8-3	96	Not Req.				

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	Westinghouse PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M2	690V023H03 (LP)	W-64MGS† or W-64MGD♦	CRA-55LP † or CRA-55LPD ♦	† Jewel ♦ Diamond
	690V018H60 (78RPM)	W-64S † or W-64D ♦	CRA-55 † or CRA-55D ♦	

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M3	Switch		Off-On (Part of Changer)
M4	Motor		Phono Drive (Part of Changer)

CABINETS & CABINET PARTS

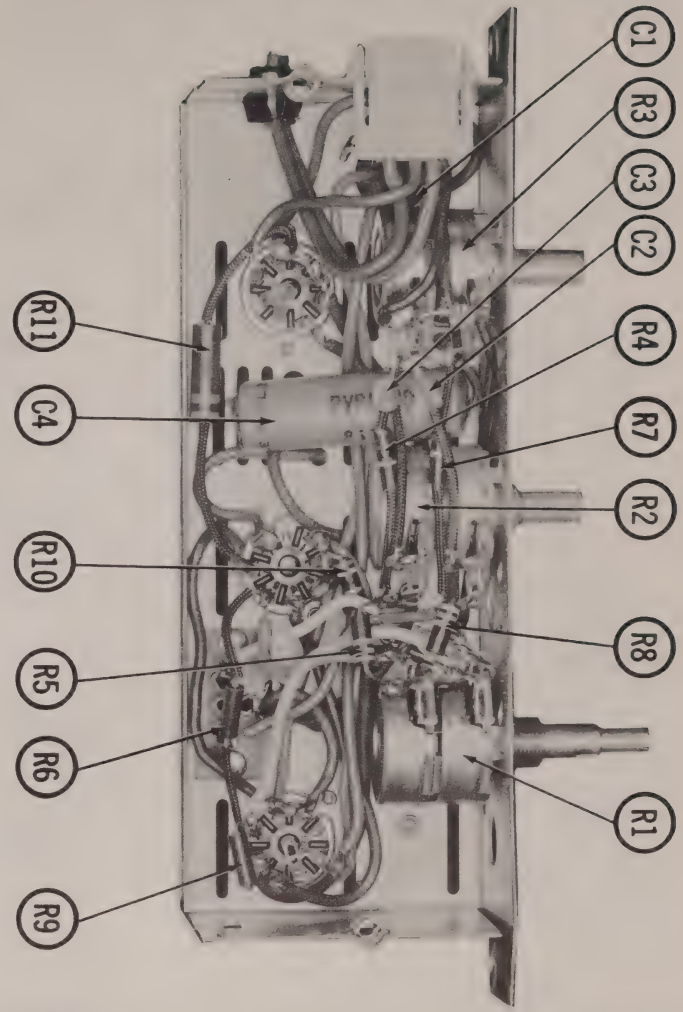
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

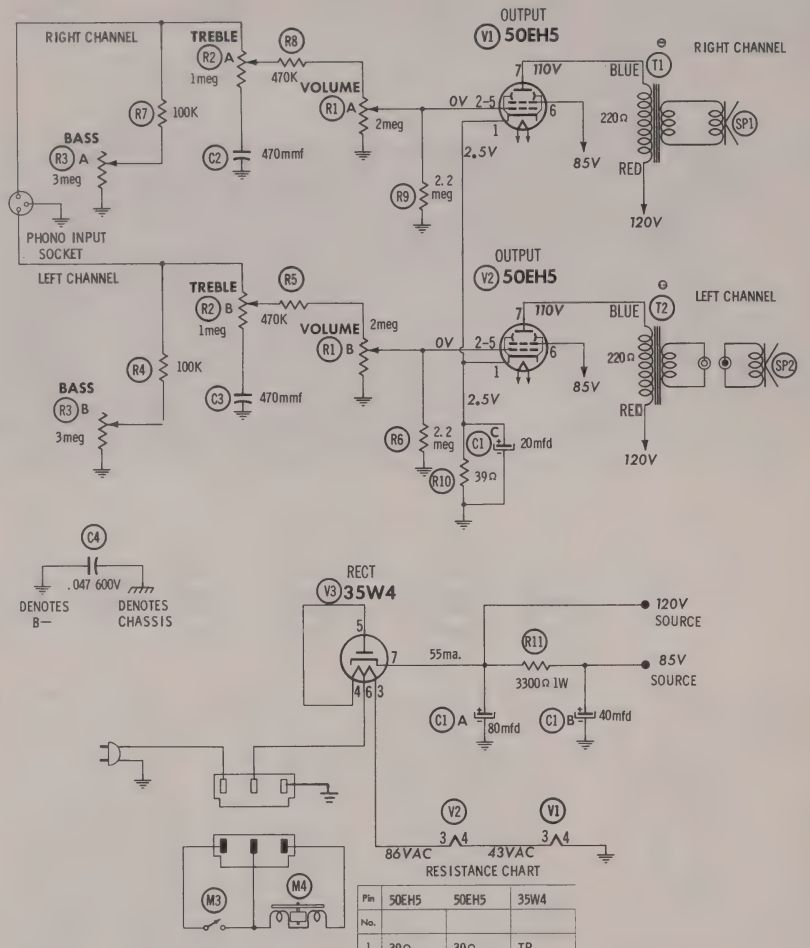
NAME	PART NO.	DESCRIPTION
Knob	550V142H01	Volume (Outer)
Knob	559V073H01	Volume (Inner)
Knob	550V118H02	Treble
Knob	550V116H03	Bass
Cabinet	516V115H01	Model H-55ACS1 (Less Speaker Enclosure)
Cabinet	516V115H02	Model H-55ACS2 (Less Speaker Enclosure)
Speaker Enclosure	690V012H84	Model H-55ACS1
Speaker Enclosure	690V012H86	Model H-55ACS2

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





RESISTANCE CHART

Pin No.	50EH5	50EH5	35W4
1	39Ω	39Ω	TP
2	0Ω	0Ω	TP
3	50Ω	100Ω	100Ω
4	0Ω	50Ω	135Ω
5	0Ω	0Ω	135Ω
6	†3300Ω	†3300Ω	130Ω
7	†220Ω	†220Ω	¶

† MEASURED FROM PIN 7 OF V3

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT

TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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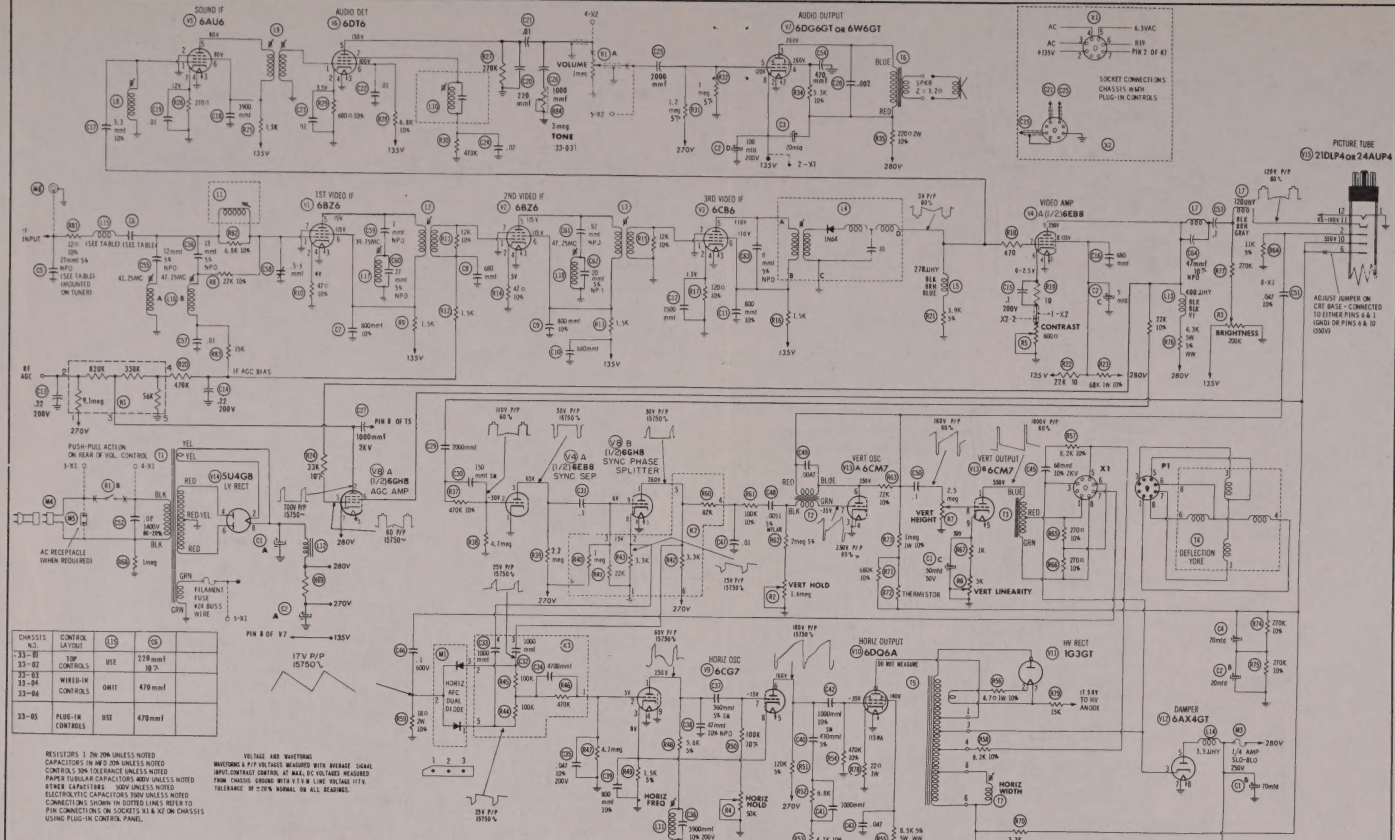
WESTINGHOUSE MODELS H-55ACS1, H-55ACS2 (Ch. V-2508-4)

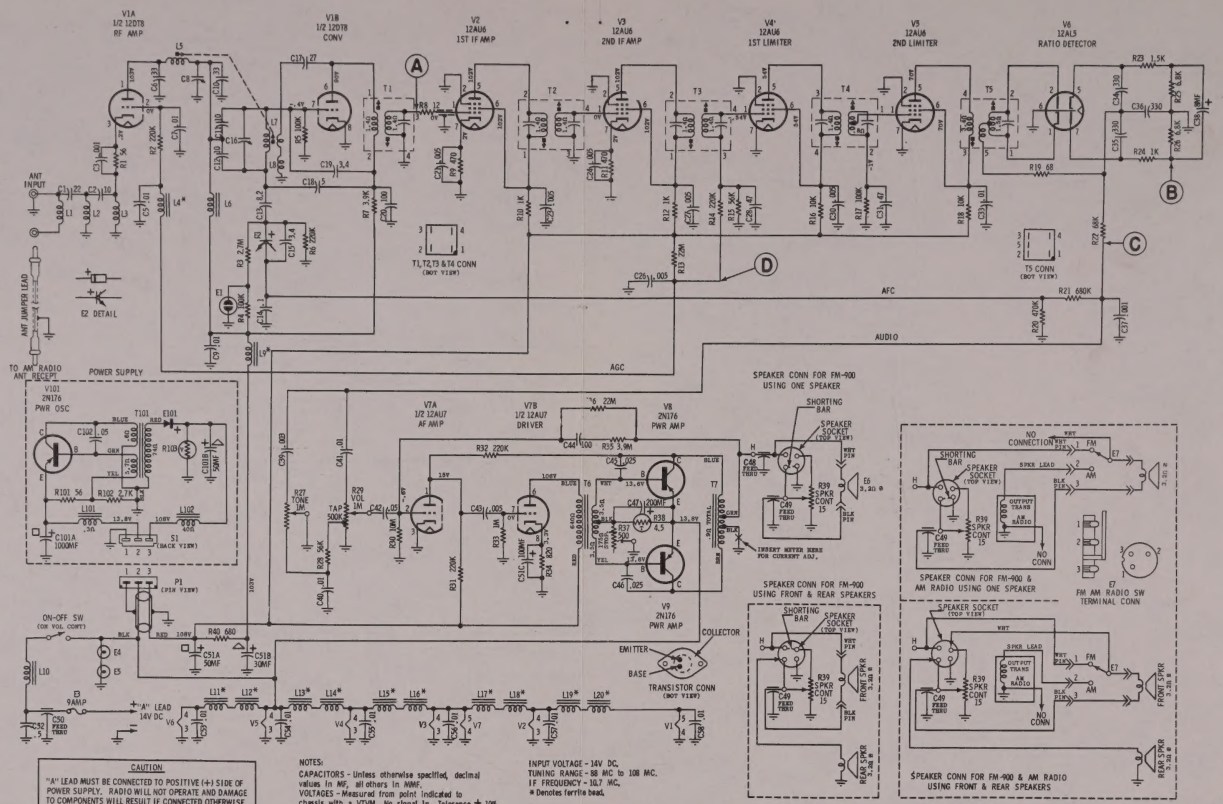


MAGNAVOX CHASSIS U33-01-00, 02-00, 03-00, 04-00, 05-00, 06-00, V33-01-00, 02-00, 03-00, 04-00, 05-00, 06-00

Schematic Diagram Courtesy of The Magnavox Company

← MAGNAVOX

MOTOROLA



CAUTION:
"A" LEAD MUST BE CONNECTED TO POSITIVE (+) SIDE OF POWER SUPPLY. RADIO WILL NOT OPERATE AND DAMAGE TO COMPONENTS WILL RESULT IF CONNECTED OTHERWISE.

NOTES:
CAPACITORS - Unless otherwise specified, decimal values in MF, all others in MMF.
VOLTAGES - Measured from point indicated to chassis with a VTVM. No signal in. Tolerance ± 10%.

INPUT VOLTAGE - 14V DC.
TUNING RANGE - 88 MC to 108 MC.
IF FREQUENCY - 10.7 MC.
* Denotes ferrite bead.

MOTOROLA MODEL FM-900

Schematic Diagram Courtesy of Motorola Inc.

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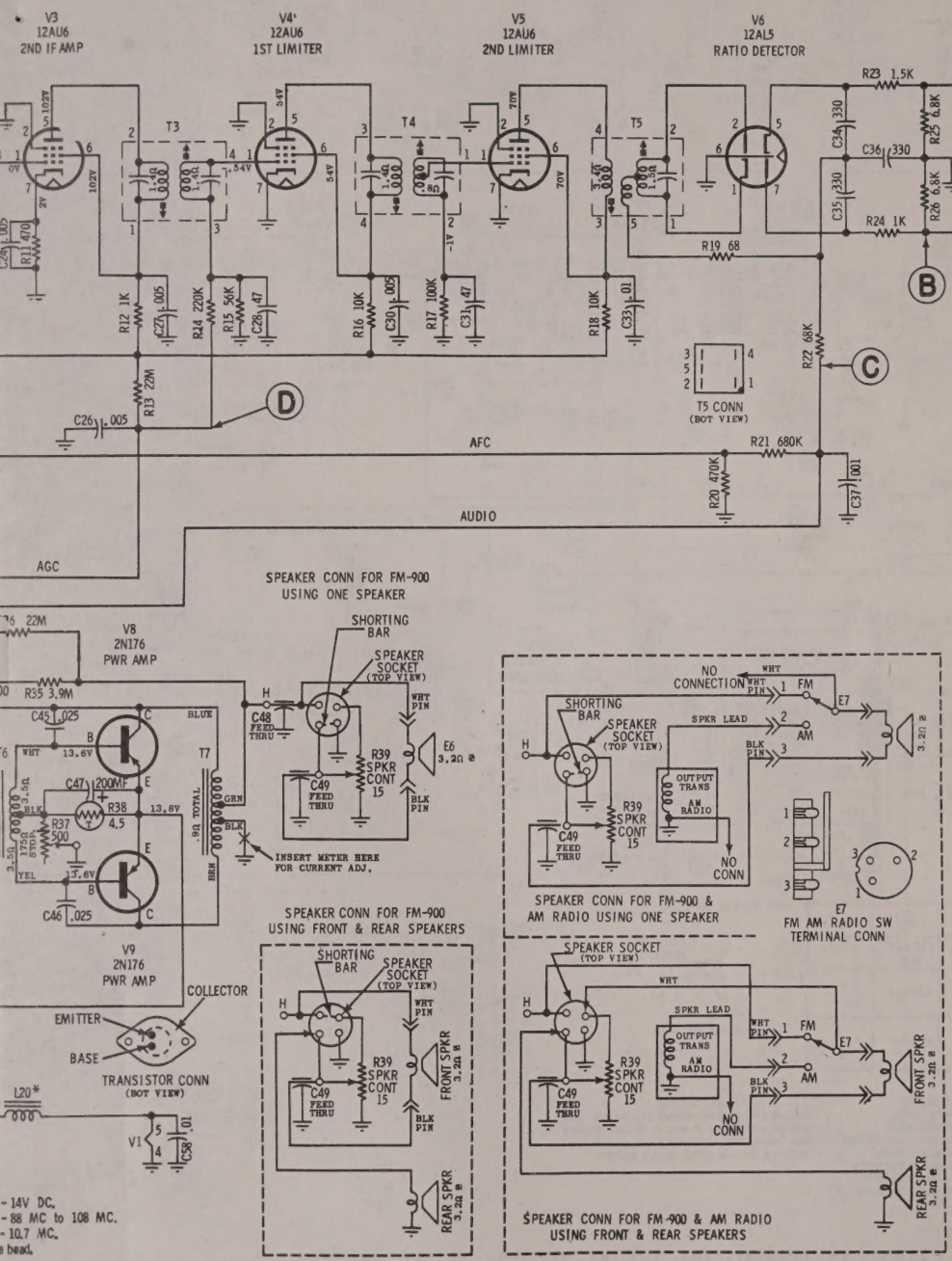
SET 501 FOLDER 19-S



Schematic Diagram Courtesy of Motorola Inc.